# THE DENTAL DIGEST

## The Witnesses for the Prosecution

by

The Editor



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THE
DENTAL DIGEST

Vol. XXVII JANUARY, 1921 No. 1

# Lessons from the Bauman Case

**Number Three**

**By George Wood Clapp, D.D.S., New York**

## THE WITNESSES FOR THE PROSECUTION

If the Bauman case is to be taken as an example, the dentist who is sued for malpractice may be in greater danger from the members of his own profession than from all the other resources of the prosecution. This is perfectly proper in cases where the dentist who is sued is too ignorant or careless to render the quality of service common to his time and locality. But when the treatment can be shown to have been at least as good as that common to the community and the time, the dentist should be able to feel that his professional associations are elements of friendliness and support rather than of danger. And when zealots and radicals seek to impose upon the profession through the courts the procedure to which they have been unable to convert their associates by professional means, and they thereby place in serious legal danger all who may differ with them as to diagnosis or treatment, the profession is entitled to visit its disapproval and displeasure upon those who, reckless of danger, would reform it by force. This article deals with two such.

### A Resume of the Facts

To bring the case clearly to mind, the facts may be reviewed. In January, 1918, Dr. Bauman was visited by a former patient who complained of general bad health. He came to have his teeth examined and one repaired in which a filling had broken away. The tooth had never given any trouble. On opening the cavity the pulp was found dead but not liquefied. Several treatments of Formo-cresol were given, during the course of which the patient refused a radiograph and extraction. In March a crown was set upon the tooth. Immediately thereafter the tooth developed an acute abscess which burst into the mouth and subsided.

The systemic conditions appear to have grown progressively worse from before the time of the first visit to Dr. Bauman, and the patient died about a month after the last treatment of general septicaemia.



M. H.

The widow brought suit. Two New York dentists, whom it has been necessary to call "X" and "Y" in these pages, appeared in behalf of the prosecution. The more important points of their testimony may be summarized as follows:

> That the history of the case and the condition of the pulp were clear-cut indications of the existence of a chronic apical abscess, even in the absence of all the classical signs of past and present inflammation; that the dentist was at fault in not insisting upon a radiograph or an extraction; that a radiograph would have clearly indicated the peri-apical conditions about an upper first molar; that failing a radiograph or an extraction the dentist should have recommended or undertaken the removal of the apices of as many roots as were affected; that the use of Formo-cresol in the treatment of chronic abscesses was a competent producing cause of the general septicaemia; and finally that the diagnosis and treatment in this case showed an ignorance of the principles of dentistry and carelessness in its practice.

Probably because of this testimony, the jury adjudged the dentist guilty of malpractice and awarded damages in the amount of $20,000.

It is proposed to discuss here the ethics and intelligence which made such testimony possible.

## The Ethics of Drs. X and Y

The Standard Dictionary says that ethics discusses the doctrine of right conduct in the varying relations of life. Please note that nothing is stated about the assumption of ethical holiness or verbal profession. These are passed by as unworthy of attention and the definition goes straight to the expression of a person's motives by his acts. In this case, a little knowledge as to some of the motives exists.

In an interview about the case, Dr. X explained how he came to appear in the case about as follows: The testimony given by Dr. Bauman in the preliminary hearing was placed before him for study. He did not approve of the diagnosis or treatment. He examined the membership lists of one or two societies and did not find Bauman's name. Some one told him that Dr. Bauman was an advertiser; *he didn't seem to have any friends.* This seemed to Dr. X like an opportunity to establish a standard of ethical sanctity for which the profession had struggled many years, and he determined to show such fellows that they might either make their practices ethical and join the societies or get out of practice. He said that the attorney for the prosecution had led him and Y further upon the stand than they intended, and they had said some things they regretted. Except for this, he appeared to feel that his action was right and proper and that the testimony was correct in principle. He states frankly that their principal reason for signing

the retraction was to escape publicity which this magazine was arranging for them. During these very remarkable statements Dr. Y said but little, but that was in approval and he offered no dissent.

### How Drs. Y and X Came to be Witnesses

When an attorney is to try a case he must develop witnesses who will help him win. In this case it required one or more dentists who would turn upon another dentist with such vehemence as to make a verdict possible.

It is known in the legal profession that there are persons, usually not lawyers, who make a practice of "ambulance chasing," that is, developing suits where, perhaps, none was originally intended and of submitting such prospects to attorneys for trial. They also sometimes search out the witnesses of the occurrence or such persons as could give useful testimony. It is understood also that attorneys engaged in accident and negligence cases employ men to locate such witnesses. These men are shrewd judges of human nature. They well know that overdevotion to one idea shuts out the perception of many others. If for this case they could find some dentist sufficiently antagonistic to the diagnosis and treatment, which they knew would be presented at the trial, so that his zeal in establishing his pet ideas would outrun his discretion, he might be gotten to pull their chestnuts out of the fire without perceiving that he was betraying his professional ethics or doing his best to place all of his fellow practitioners in serious legal danger. He might easily be led to think that the attorney for the prosecution was interested in establishing a certain level of service. Of course, his only interest would be in the nature and amount of the verdict.

Why should Dr. Y have been approached to serve as a witness if it was not that he appeared to be a person upon whom this could "be put across?" He was practically unknown to fame. It would have been easy to have chosen a hundred dentists of much greater professional reputation. There is nothing to indicate that these men were approached, perhaps because it was known that experience has tempered their zeal to a better perspective. One can feel sure of a long list of dentists, honored in the profession, who would have scorned to accept an invitation to appear for the prosecution in such a case.

Dr. Y, having been properly developed as a witness, invited Dr. X into the case.

### An Analysis of Dr. X's Statements

Note Dr. X's statement that he did not find Bauman's name on the membership lists of the societies he mentioned. It did not occur to me to ask him whether he would have declined to appear if he had found the name on one of those lists, but I certainly got that impression.

Someone told Dr. X that Bauman was an advertiser. That settled it. Probably his ethical soul had long been enraged that such creatures should be permitted to exist. Here was a chance to show such persons that they must either become ethical or quit dentistry. What the profession had not done in a hundred years, he would do by the might of his intellect and the courage of his convictions. Isn't this a perfect example of over-emphasis of one idea throwing a mind entirely out of perspective? Perhaps he thought himself a masculine Jean d'Arc, appointed of Heaven to guide and save the profession.

"He appeared to have no friends." This statement to me by one of these men and concurred in by the other's presence and silence is, to my mind, when taken in connection with the occurrences of the case, the most damning negation of all their ethical pretensions that it is within the power of words to construct. There is in it no sense of fair play or justice or a sobering realization that perhaps not all of their own work had been 100 per cent perfect, only wild zeal and fatuous conceit based upon ignorance so great as to be appalling, if they had but known it. When a big, brave man, who feels himself fully armed, boldly jumps upon an enemy whom he feels to be unarmed and unsupported, it always raises the question whether he would have jumped at all if the other fellow were of equal size, agility and power. In the light of this quotation from these men, each of us can probably think of a list of dentists who might possibly have treated Williams in 1916, just as Dr. Bauman did, with similar results. And each of us will feel that if Drs. X and Y had read any one of these names in the testimony, they would have respectfully declined to appear in the case. They would have known that their attack would have been thrown back in disaster. They would have felt that silence was, for them, very much safer, and their ethical conviction and the Heaven-given leadership would have never gotten into court.

In this conversation, Drs. X and Y made much of the fact that Dr. Bauman was unable to produce suitable records of treatment. They must have been hard put to it to satisfy their own consciences because this was none of their business. The attorney for the prosecution apparently accepted Dr. Bauman's testimony as the basis for the trial.

During the conversation there was apparently not the slightest perception that the entire profession had been on trial and had been endangered by them. Except to express regret that the attorney for the prosecution had led them to say some things, they appeared satisfied with what they had done. In fact, Dr. X, in a newspaper interview (N. Y. World of July 13, 1920) merely "corrected" his testimony as the following extract shows:

> "Dr. X, at his office, denied he had made a 'retraction' of his testimony, but admitted he had corrected it. He insisted that his

testimony favoring extraction of the tooth in Mr. Williams's head, which was otherwise treated by Dr. Bauman, still stands. He insists there was no excuse for the methods used by Dr. Bauman in that case."

This little analysis should not close without a reference to the change which came over affairs when those who realized the danger to the profession and had the power to turn the light of publicity on this thing which had been done in a corner, interested themselves for the good of all. Discretion must have whispered to X and Y, "Your name will be a by-word and a hissing in thousands of dental offices and your professional careers blasted. If there is a second trial your professional reputations will be torn to tatters. Your friends are telling you that you have made of yourselves fools and worse. You'd better get out while the getting is good." And they got out.

"Thus is the native hue of resolution
sicklied o'er with the pale cast of thought,
And enterprises of moment, with this regard,
their currents turn awry
And lose the name of action."

## Their Fitness to Serve as Witnesses

It is an open question whether Drs. X and Y were not unfitted from the very beginning to serve as witnesses by the radical nature of their views, by the conceit which assured them that everybody who differed with them was wrong and which led them to pretend to the possession of knowledge not possessed by them or anybody else; by an almost complete lack of knowledge of what was common practice in Dr. Bauman's vicinity at the time; by an evident animus against the defendant; and by their inability to realize the importance to the entire profession of the issues at stake. Let us briefly consider the last statement.

During the interview in my office, which has been referred to, I asked Drs. X and Y whether they could not see that the law courts were no place in which to establish their ideas of diagnosis and treatment since they placed every dentist who differed with them in legal danger. I tried to show them that the dental magazines and the societies were open to them. They seemed absolutely impervious to the idea and to be unshaken in the determination to force upon the profession that course of action to which they could not persuade it. In thinking it over afterward, they seemed to me much like children playing with a gun, not knowing that it was loaded. And it is usually the gun thought not to be loaded that kills someone.

Consider the conceit. They never saw the patient; he had been dead about four years at the time of the trial. Merely by reading a few lines of type they were able to make so complete and exact a

diagnosis that they were willing to define the condition with certainty and just what the treatment should have been and, in court, swear away another dentist's reputation and savings because he differed with them. Dr. Y made the definite charge that if the dentist failed absolutely to recognize in the root the conditions which they say existed it was an error which might be termed carelessness. The effect of this charge is believed to have been very serious. Yet in 1920, four years after the time of this alleged carelessness, thirty-four leading dental colleges state unequivocally that they believe it to be impossible to diagnose the existence of a chronic, blind alveolar abscess in the absence of a fistula or of past or present pain or swelling without radiographs or bacteriological cultures from the peri-apical tissues. No college replied that it believed such a diagnosis possible.

California is a long way from New York, but they have some very intelligent dentists there. Dr. Guy S. Millberry, Dean of the College of Dentistry, University of California, sent to a list of dentists, selected for their intelligence and the excellent quality of their work, the questions asked of the colleges. Thirty-two of them replied unhesitatingly in accord with the thirty-four colleges. How self-sufficient must that dentist be who can charge a fellow-practitioner, in court, with carelessness for not doing the thing which more than half of the leading dental colleges say cannot be done!

### Marvellous Knowledge as Radiographers

It is unfortunate for the entire profession that men possessing such knowledge of radiography as these men claim should be buried in the comparative obscurity of private practice, while so many earnest workers are burning the midnight oil to learn how to do the things they seem to accomplish so easily.

Remember that the tooth in question was an upper first molar. Dr. Y states that a radiograph would have enabled the dentist to make definite diagnosis of the peri-apical conditions, and Dr. X explains to the jury that while radiographs sometimes fail, they do not fail in cases where the pulp is dead. Dr. X shows some films, but mind you he does not show a film of an upper first molar. He shows one of a lower first molar and of an upper central. Is this the course of a man seeking to help establish justice?

How backward, compared with these men, are our dental colleges. The thirty-seven colleges which replied to the questionnaire stated unequivocally "No," in reply to the question, "Do you believe X-ray pictures, in 1916, to have been capable of establishing a positive diagnosis of peri-apical conditions?" And some of them add that even today they cannot be sure of it in upper first molars, which statement is endorsed by leading radiographers not connected with the colleges.

Of the thirty-two replies received by Dr. Millberry, thirty-one were to the same effect as the replies from the colleges.

### Peerless Oral Surgeons

The oral surgeons of the country will learn, possibly with surprise, that the removal of the apices of all the roots of the upper first molar is a routine operation, frequently performed and not objected to by any practitioners or schools, so far as Dr. Y knew. He had seen it done recently.

When this statement was submitted to one of the leading oral surgeons of the country, he said: "The removal of the apices is not successful in multiple rooted teeth. The man who, in the light of our experience to date (four years after Williams was treated), removes one apex of an upper first molar is one damn fool; if he removes two apices, he is two damn fools; if he removes three apices, he is three damn fools." Other dentists of very high standing approved the statement, adding, "No man can tell what he is getting into when he starts that operation. It cannot be done with good prospects of success."

Dr. X repeatedly referred to surgical intervention as one of the alternatives open to Dr. Bauman, but does not explain how it could be done in view of the patient's refusal to have a radiograph taken.

### Extended Knowledge of Medication

There is neither time nor space to discuss the knowledge of the action of Formo-cresol, as shown by the testimony. Remember that Dr. Bauman was not legally required to be the greatest living specialist in this line, nor were X and Y entitled to criticize him for not being that. He was required by law to render an average quality of service.

Drs. X and Y unsparingly condemn the use of Formo-cresol in the conditions described by Dr. Bauman and diagnosed by themselves. They charge it with increasing the absorption of the pus which they diagnosed from the typewriting to exist at the ends of the roots, with causing necrosis of the peri-apical tissues and being a competent producing cause of the general septicaemia.

To the question, "Do you believe the application of Formo-cresol to the root canals and sealing it in, as described above, would produce gas which would set up a severe peri-apical irritation, favor the necrosis of the process, and be a competent producing cause of septicaemia?" thirty-six colleges replied. Thirty-one said "No." One said "Not likely." The other four said careless application might possibly cause such results.

Of thirty-two replies received by Dr. Millberry, thirty-one said "No." One said "Possibly."

Thirty-six colleges have used Formo-cresol in the treatment of pulp-

less teeth, and one uses solutions of formalin in creosote. Thirty-two of these colleges still use it.

Twenty-nine colleges used Formo-cresol in both acute and chronic conditions on non-vital teeth in 1916. *Five colleges limited its use to chronic conditions* for which use X and Y especially condemn it. Nearly 60 per cent of the leading dental colleges were, in 1916, teaching and practicing the very thing for which X and Y sought legal condemnation of Bauman. If they didn't know it, they were not competent witnesses. If they did know it, their testimony was unfair.

Thirty-one colleges have had no considerable percentage of unfavorable results from the use of Formo-cresol. One had no use for it. One writes, "Fewer failures than with any other agent."

In reply to the question, "Do you regard the removal of the pulp by the methods described and the application of Formo-cresol as described as showing a lack of knowledge of the principles of dentistry or carelessness in its practice?" thirty-one colleges say "No." The three which answered at greater length did not indicate that they thought the treatment was careless or unintelligent.

The sum of the foregoing is that in the matter of diagnosis, dependence upon the radiograph, the use and effects of Formo-cresol, and the practicability of removing the apices of the upper first molar roots, X and Y were in direct opposition to about 60 per cent of our leading dental colleges, which train more than 60 per cent of our graduates. In the opinions of some of our most earnest investigators, many of their statements cannot be supported with proof, even today.

## Ignorance of Local Conditions

During the interview which has been referred to, X and Y admitted that they were not well informed as to conditions of practices in the county, which, to every thorough-going New Yorker, is "country." Yet these are the conditions by which Bauman had a right to be judged.

Westchester County apparently had, in 1916, 163 dentists. X and Y did not know how many X-ray outfits there were in the county or how far from Bauman's office Williams needed to go to have a radiograph taken. They did not know what experiences the country dentists had enjoyed with radiographs, how generally they demanded them or whether they were in the habit of refusing to work upon a given tooth following the patient's refusal to have it radiographed or extracted.

Here is a bit of history entirely unknown to them, but important to Dr. Bauman. In 1915 there had been an X-ray outfit in New Rochelle. It belonged to one of my friends, one of a group of unusually intelligent, industrious and ambitious dentists. They worked diligently trying to learn to take good pictures and interpret them correctly, trying to apply some of the things X and Y said were within every dentist's reach be-

fore 1916. Their best efforts led to so many wrong diagnoses, the opening of pulp chambers only to find the pulp vital and healthy, the passing by of pathological conditions, etc., that upon the death of the owner of the machine, in 1915, no dentist in town cared to purchase it and the manufacturer had to take it back. In February, 1916, there was no X-ray machine in a dental office in New Rochelle, and apparently only one in a dental office in the entire county. There was, among the dentists, a profound distrust of radiographs, as then interpreted.

As nearly as can be ascertained by a canvass of the dentists who were practicing in the county in 1916, very few indeed were in the habit of exacting radiographs, though many asked for them; and few were in the habit of refusing to treat a tooth which the patient would not have radiographed or extracted.

What spirit does a professional man exhibit who, knowing nothing of the conditions under which work is done, is prepared to swear away the reputation and savings of a member of his own profession who follows the procedure common to his community at that time?

And now we come to a part of Dr. X's testimony which can be traced in lighter vein. For, when the attorney asked how he treated root canals, he explained, in substance, that following the radiograph, which the patient had refused, and the removal of the apices, which couldn't be done, he treated root canals by ionization.

It must have been very impressive. Think of twelve laymen in the jury box hanging on his words of wisdom and the very professional sounding references to electrodes and milliamperes and nascent zinc chloride. Surely here is the fount of all knowledge. But a little look behind the scenes shows one that the wisdom and cleverness were all on the part of the prosecuting attorney, who encouraged the professional bombast, meanwhile causing the witness to extract unknowingly from the fire, his chestnuts, possibly $12,000 worth of them.

It is interesting to imagine what might have happened to X and Y if they had treated Williams by surgical intervention and he had died of general septicaemia and they had been subjected in court to an attack as well organized as that in which they took part.

## Conclusion

These, then, are the men who exposed the members of the dental profession in this country to the greatest legal danger it has faced for some years past. This is what is known of the spirit in which they did it. Are they not entitled to severe censure?

And is not any dentist, anywhere, who without knowing the local and general conditions of practice, takes the stand for the prosecution in a malpractice suit, entitled to similar censure?

And is not any dentist entitled to censure who testifies for the prose-

cution in such a suit without knowing just what procedures are justified in careful, intelligent, conservative practice?

When men who take this position without just cause and adequate knowledge are either read out of the profession or so ostracized within it as to leave them without friends or associates, there will be less danger that some thoughtless dentist may wreak upon the profession and the public an injury of which he is entirely unaware at the time.

(*To be continued*)

# Orthodontia for the Consideration of the Average Dentist

By Dr. Samuel Herder, New York, N. Y.

ONE of the most important branches of dentistry which the average practising dentist of today seems to know so little about, is ORTHODONTIA. So very few lectures upon this subject have been given before dental societies, and so very little has been written in dental magazines upon this subject—for the point of view and edification of the average dentist—that enlightenment along these lines may be considered well-nigh imperative.

With this thought in mind I am going to endeavor in a series of articles, to bring this subject to a degree within the mental grasp of the average dentist. It is not my chief aim, therefore, to introduce original ideas of my own in the field of Orthodontia, but rather to get the average dentist to become more familiar with its general and fundamental principles.

To the average dentist Orthodontia seems to be a sort of a bugaboo; a thing as complicated and confusing as the famous mirror-mazes of certain well-known summer resorts. Although Orthodontia is not altogether a very simple subject, still very little difficulty ought to be encountered by the average dentist in clearly mastering its general and fundamental principles.

## Considerations in Orthodontic Treatment

The health of the patient and the condition of his nervous system must be taken into careful consideration before orthodontic treatment is commenced.

The teeth are not inanimate, inorganic organs distinctly apart from the rest of the human body. They are in fact a throbbing, pulsing, most vital part of the entire living human organism. In moving teeth for the purpose of correcting malocclusion, we must not, therefore, treat them as if they were seated in a block of wood or other foreign body, but we must take into very careful consideration all of the various structures within and immediately surrounding the teeth, such as the enamel, dentine, cementum, peridental membrane, alveolus and gums. For we must bear in mind that an injury to the gum, peridental membrane, alveolus or pulp, is not simply an injury to those parts alone, but is an injury to the entire human organism. We cannot dissociate the gums, pulp or peridental membrane from the rest of the human body with which they are inseparably connected by means of nerves, blood vessels, etc., unless the tooth or teeth concerned are definitely removed—surgically or otherwise—from the body.

### The Growth and Development of Alveolar Bone

Not only must care be exercised in order to prevent injury to the tissues just mentioned, but a study of bone growth and development, particularly of alveolar bone should be made. The function and characteristics of the bone cells of the alveolus in building up new bone for the support of teeth which have been moved orthodontically, must be understood, if trouble is to be avoided and good results obtained.

Aside from the actual mechanical force involved in moving teeth, it must be borne in mind that one of the most important functions of orthodontic appliances is to stimulate the activity of the alveolar bone cells. This increased cell activity results in the building up and development of bone around the teeth. If bone growth is not understood, as is evidenced by the cases where too much force is exerted upon the teeth by orthodontic appliances, the proper and normal function of the bone cells in the building up of new bone is materially interfered with, and an unsatisfactory condition results.

### The Development of the Muscles of the Face and Jaws

An important fact of which the average dentist seems to have slight knowledge is that the normal development of the muscles of the face, jaws, and tongue is absolutely essential to the maintenance of normal occlusion* of the teeth. It must be clearly borne in mind that while the alveolus, the investing tissues of the teeth, the composite arrangement of the teeth in each jaw, and their relation to each other in occlusion, mechanically hold the teeth—to a great degree—in their natural position in the jaws, still the muscles immediately surrounding the teeth, such as those of the lips, cheeks and tongue, are also very materially instrumental in maintaining this natural position of the teeth.

It may appear to the casual observer that these soft resilient muscles cannot possibly be of service in lending support to the teeth and in maintaining proper occlusion, but it should be definitely impressed upon the reader's mind that such is not the case, and that the continual normal functioning of these muscles results in a very pronounced force towards the support or retention of the natural occlusion of the teeth.

### The Disuse and Abuse of the Muscles Immediately Surrounding the Jaws

There are many bad muscular habits, ranging from mild disuse of the muscles above mentioned, to very pronounced abuse of these muscles. These habits are clearly definite contributing causes of malocclusion.

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* Note.—In using the term "normal occlusion" in this and subsequent articles, I refer to the normal occlusion for the individual concerned (no two cases of which can be identically alike) and not to a specific ideal (hypothetical) normal occlusion.—S. H.

In the treatment and correction of malocclusion, therefore, it is absolutely essential to correct these habits before the permanent retention of a corrected case can be expected.

Through carelessness in physical training, improper development of the character of the individual, obstructions in the nose and throat (such as enlarged tonsils and adenoids) the patient breathes through his mouth instead of through his nose. Right here it may be well to note that the mouth was made to eat and talk with, not to breathe with (except when performing very violent exercises or similar instances).

In the ordinary routine of daily life every human being ought to make the utmost effort to breathe through the nose only. Aside from the fact that mouth-breathing renders the mouth parched and dry, and the throat particularly addicted to soreness (often quite pronounced), the inhaled air is not warmed, moistened and filtered in the very efficient manner of nose-breathing. It is not very difficult to understand what happens to an organ such as the nose, the function of which (breathing) has been almost entirely discontinued. It becomes atrophied—at least as far as the nasal passages are concerned—and of course pathological. The effect of the disuse of the nose (as a breathing organ) upon the facial expression, and indeed upon the entire future career of the individual concerned can be very readily noted after but little reflection.

By studying this question a step further, we will very readily understand just what effect mouth-breathing has upon the muscles involving the jaws. Take, for example, the muscles of the lips. Instead of their normal function and exercise such as that involved in pursing the lips and thereby shutting off the air during respiration, thus developing them in tone and texture, their lack of exercise renders them relaxed and flabby. In this condition they present that listless, characterless expression to the face so easily noticed by the casual observer. The continual relaxation and disuse of these muscles releases their wholesome normal pressure upon the anterior teeth, thus resulting in their gradual protrusion in the direction of least resistance. At this stage, with but little reflection, it may be readily seen what a great amount of havoc may be wrought. With the mouth habitually open, the tongue is quite naturally pushed forward, often beyond the teeth, between both jaws. Thus bad habits such as tongue sucking, are very easily formed.

The lips also lend themselves to very mischievous habits when the mouth is habitually kept open. In this position the pliable tissues of the lips tend to adapt themselves—to a greater or lesser degree—over the occlusal surfaces of some of the anterior teeth. Thus the vicious habits of lip-biting and lip-sucking find a fertile soil for development.

On account of their comparative inactivity and lack of exercise—as has already been suggested—both the upper as well as the lower lips of mouth-breathers are short, flabby and underdeveloped. Either one

or both lips, therefore, may be very readily subject to the habits just mentioned.

## Summary

The following facts ought to be clearly impressed upon the mind of the average practising dentist:

1. That the fundamental principles of Orthodontia can be—with but little effort—easily grasped by the average dental practitioner.
2. That its importance to the patient's—and therefore the dentist's—welfare is so great that no progressive dentist can afford to overlook it.
3. That the health of the patient and the condition of his nervous system must be taken into consideration in orthodontic treatment.
4. That the teeth are not inanimate, inorganic organs distinctly apart from the rest of the human body, but that they are in fact a throbbing, pulsing, most vital part of the living human organism.
5. That one of the most important functions of orthodontic appliances is to stimulate the increased activity of the alveolar bone cells.
6. That besides the alveolus and investing tissues of the teeth, the muscles of the face and jaws are very materially instrumental in maintaining the natural and in cases of malocclusion, the abnormal occlusion of the teeth in the jaws.
7. That the vicious disuse and abuse of the muscles of the face, jaws and tongue (ranging from a slight disuse, to pronounced vicious abuse such as lip-biting and similar habits), must be definitely corrected, before the permanent retention of corrected cases of malocclusion can be expected.
8. That all malocclusions besides interfering with normal speech and mastication, alter—in proportion to the degree of the malocclusion—the harmonious facial characteristics of the individual concerned.
9. That the neglect of cases of malocclusion not only affects the physical health of the individuals concerned—to their detriment—but their entire future career as well. This condition, as has already been intimated, is of course proportional to the degree and extent of the malocclusion.

*(To be continued)*

# Spongy Vulcanite

By George B. Snow, D.D.S., Long Beach, Cal.

(Third Paper)

It is well known that when a thick piece of rubber compound is vulcanized, especially if the vulcanizing point is high, and the temperature is raised quickly to that point, that although the exterior of the piece is hard and apparently well vulcanized, its interior will be spongy or "porous" as it is sometimes termed. If the piece is cut in two it will be seen to consist of a hard shell, while its interior will be found to be soft, spongy, and to exhale an odor of hydrogen sulphide, if the case is an aggravated one. Or the sponginess may be less in amount, being manifested by a few pores in the center of the mass. It does not occur except when the piece of rubber vulcanized is of considerable thickness, and it may be laid down as a rule that when it does occur the piece has been subjected to too high a temperature in vulcanizing.

The vulcanization of rubber is consequent upon the combination, under the influence of heat, of the caoutchouc and sulphur present as a mechanical mixture in the rubber compound operated upon. If only a small proportion of sulphur, say 10 per cent., is incorporated with the caoutchouc, and the compound is exposed to a comparatively low temperature, say from 250° to 270° Fahr., for from 15 to 35 minutes, the product will be soft and elastic, as will be exemplified by ordinary rubber tubing, automobile tires and other articles known to the trade as soft rubber goods. If the compound is exposed to a high temperature, or for too long a time, the product will be overdone, and although it is apparently all that could be desired at first, it soon changes, becomes stiffer and brittle, and in a few weeks loses all its desirable properties.

If the proportion of sulphur incorporated with the caoutchouc is increased to 25 per cent., or more, and the compound is subjected to a higher temperature, say from 280° to 340° Fahr., and for a considerably longer time, an entirely different product is the result, which is known as Vulcanite. If the piece to be vulcanized does not exceed one-tenth of an inch in thickness it can be subjected to a high temperature in vulcanizing without apparent injury, but it is questionable if 320° actual temperature can be exceeded in any event without incurring some danger of injury to the product. It will lose something of its toughness and elasticity, and after a time will be found to be growing brittle. This is especially true when it becomes necessary to re-vulcanize a denture when repairing it. This cannot be done many times before the vulcanite has deteriorated to such an extent that new rubber must be substituted for the old.

The different dental rubbers as they are found in the supply houses

vary considerably in their composition, but little is known about them in this respect. Suffice it to say that a mixture containing a very large proportion of caoutchouc and sulphur will possess the most tensile strength, but will have considerable shrinkage and will require more care in vulcanizing if the mass is over a fifth of an inch in thickness to prevent it from being spongy. Such rubbers should not be vulcanized at over 300° Fahr., by the mercury bath thermometer (320° actual temperature). The color of such a rubber will always be dark, almost black, when vulcanized.

The introduction of coloring matter will always detract from the strength of the product, it will show less shrinkage, and will not become spongy so easily as the purer compounds. The more coloring matter and the more adulteration, the less shrinkage will be shown, and the less tendency to become spongy, and more heat may be used in vulcanizing; but the resulting product will be weaker. When we come to pink rubbers, which are used as veneers, they consist principally of oxide of zinc and vermilion, with only enough caoutchouc and sulphur to bind the different ingredients together into a solid mass, and are notoriously weak.

The proportions of the different materials used in the manufacture of dental rubbers are kept as trade secrets. Dr. Wildman's recipes which are published in the text books upon Dental Prosthesis afford about all the information we have upon this point.

In ascertaining the amount of shrinkage of different samples of rubber, experiments were at first performed in a mold which produced disks one-fourth of an inch thick; and it was found that some of the samples of rubber became slightly spongy when vulcanized at the temperature ordinarily used in dental practice; 320° by the mercury bath thermometer. The influence of the mercury bath upon the thermometer is such that the correct temperature is not shown by about 18°, so that these pieces were actually vulcanized at a temperature of 338° Fahr. As it was desired to vulcanize samples at this higher temperature, which is in general use, for comparison with those vulcanized at 320° actual temperature, it was necessary to reduce the thickness of the mold from one-fourth to one-fifth of an inch. Satisfactory results were then obtained, and it was shown that 320° by the mercury bath thermometer is too high a temperature to be safely used when the thickness of the rubber to be vulcanized approaches one-fourth of an inch. The thicker the piece to be vulcanized the lower the temperature, and the longer the time which must be used in vulcanizing.

As an illustration of this fact, the following experiments are cited. A piece of brazed brass tubing 18 mm. inside diameter, and 19 mm. long, was lined with heavy tin foil, and filled with red rubber compound, its ends being covered with tin foil and closed by strong flat

brass plates and bolts. The piece was then vulcanized for three hours at 65 lbs. steam pressure (312° Fahr., actual temperature, or 294° by mercury bath thermometer). Its expansion, when heated, caused the expulsion of some of the rubber, although the plates were bolted against the ends of the tube with considerable force. In one experiment the force of expansion was so great that it burst the tube at its brazed seam. Vulcanized at this temperature, the center of the piece was spongy, its sides were closely applied to the tube, and its ends were flat.

Another sample, in a tube of exactly the same dimensions was vulcanized for four hours at 50 lbs. pressure, 298° (or 280° by the mercury bath thermometer). Some of the rubber was expelled by its expansion, when heated, as before; but when this piece was sawed in two through the center it proved to be solid. There was not the slightest trace of sponginess, but the sides and ends showed marked concavity. An account is given of this experiment to illustrate the fact that good vulcanizing can be done at as low a pressure as 50 lbs., by allowing sufficient time for vulcanization. The vulcanizing temperature was attained in about the usual time, say twenty-five minutes.

When vulcanite was first introduced into dental practice the temperature mentioned in the directions furnished for vulcanizing by the manufacturers of dental gums, was 320° Fahr., at about two hours time.

The vulcanizers used in dental practice at this time were very clumsy affairs, were heated by coal stoves, and were seldom if ever steam-tight for more than a few minutes at a time, as the temperature was regulated by blowing off steam from a safety valve. The thermometers were so mounted upon them then that the bulb entered the steam space. The air which was included in the vulcanizer above the water level acted as a deterrent to the transmission of the heat, but it soon leaked out; and thereafter the thermometer, having its bulb in an atmosphere of pure steam, indicated the correct temperature. But high pressure steam has a corrosive action upon glass, and in consequence the thermometers mounted upon vulcanizers required frequent renewal. For this reason the mercury bath thermometer, which insured the permanence of the glass tube, was a very welcome improvement and soon came into extensive use.

Simultaneously with the introduction of the mercury bath came a better construction of the packing joint for dental vulcanizers, and the included air which leaked out of the old vulcanizers was retained; thus adding a second cause for an incorrect indication of the temperature of the vulcanizer by the thermometer; and in the meantime the new vulcanizers were doing their work in a much shorter time than did the old leaky ones. Then came the addition of the blow-off valve,

by means of which the air could be expelled, but the retarding effect of the mercury bath upon the transmission of heat to the thermometer still remained; and to this day, dentists are vulcanizing at what they suppose to be 320°, when the temperature they actually employ is about 338°.

When 320° Fahr., actual temperature, is employed for vulcanizing, the time for performing the operation must be from 100 minutes to two hours, depending somewhat upon the quality and peculiarities of the rubber compound employed.

It will be observed that instead of giving the vulcanizing temperatures in degrees, it is herein often mentioned as being in pounds of steam pressure. The reason for this is that there are frequent variations in the indications of thermometers as they are mounted upon different makes of vulcanizers, as will be seen from the preceding paragraph. The indications of the steam gage are much more apt to be correct and can be easily converted into degrees of temperature.

Sponginess can always be avoided by careful management of the vulcanizing temperature. When it is found, it shows that the compound has been subjected to too much heat. When very thick pieces are to be vulcanized, and when compounds of pure caoutchouc and sulphur are used, it is a good practice to allow the heat to raise very gradually after it has reached 250° or 260° Fahr., and not to allow it to exceed 290° or 300° actual temperature, which will be 20° lower than what is indicated by the thermometer. The time, of course, must be proportionately lengthened.

(*To be continued*)

# Some Essentials to Masticating Efficiency in Artificial Dentures

By Alfred Gysi, D.D.S., Zurich, Switzerland



(*Continued from December*)

## The Inclination of the Incisor Path

Now, I want to call your attention to an entirely different record, one which is not usually taken or necessary. I refer to the vertical inclination of the incisor path. Let us examine its influence upon the forms of certain facets of the teeth.

So far I have proceeded on the assumption that the inclination of the condyle path and of the incisor path were the same. I have done this for the sake of simplicity, and because you will find that the steep inclination of the incisor path often seen in natural dentures should

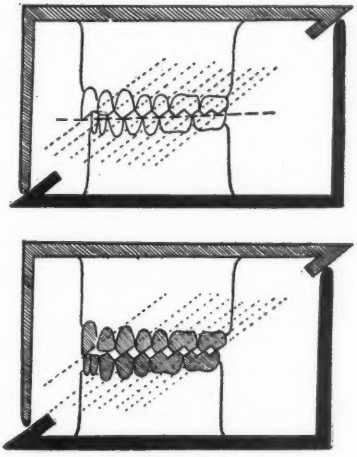

Fig. 24

not be reproduced in artificial dentures, at least for the average case. A very deep overbite of the artificial maxillary incisors gives opportunity for a strong forward push by the mandibular denture, which may often dislodge one denture or the other. My experience shows that for the average case a downward inclination of 40 degrees is most satisfactory for the incisor path.

There are, however, cases where esthetic requirements may necessitate a deep maxillary incisor overbite, or where anatomical abnormalities may require it.

In Fig. 24, for purposes of illustration, the condyle path and incisor path have been given the same downward inclination. It illustrates diagrammatically the influence of the condyle path and the incisor path upon the inclination of the forward and backward-looking facets of all the teeth. The upper drawing shows the relations of these facets when the teeth are in occlusion; the lower drawing shows the relations when the teeth are in incising bite, and how balance is maintained between the dentures during the incising bite.

Fig. 25 shows diagrams of two conditions in which the condyle path and the incisor path differ in inclination. In the upper drawing the condyle path is steep and the incisor path nearly horizontal, while in the lower drawing the condyle path is nearly horizontal and the incisor path is steep. In both drawings the forward-looking facets of the mandibular teeth and the backward-looking facets of the maxillary teeth take compromise angles between the two inclinations. It is unnecessary that

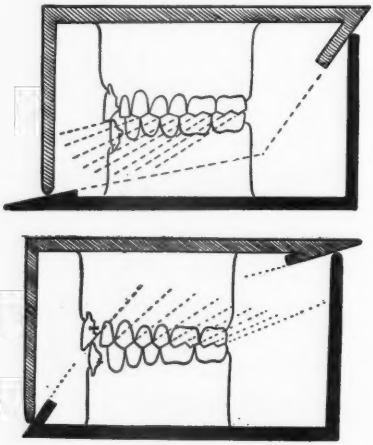

Fig. 25

I should bore you with the very complicated computations for establishing the inclinations of these facets. Suffice it to say that if the adaptable articulator be adjusted to reproduce these inclinations of the condyle path and the incisor guide incline, the compromises in the inclinations of the facets can be effected by automatic grinding without computation by the dentist.

## The Effect of the Incisor Path

I now want to call your attention to another element in denture construction, the importance of which is frequently overlooked. It is the vertical location of the opening axis of the mandible.

Fig. 26 shows three diagrams of mandibles with the downward inclinations of different mandibular incisor paths traced upon them. A perpendicular has been erected to each incisor path, at the incisor point, and extended backward beyond the mandible. In the first two diagrams, a perpendicular has also been drawn downward from the condyle path until it crossed the perpendicular to the incisor path. At the intersection of the two lines, marked O, A, is the vertical location of the opening axis of the mandible.

The location of this axis is very important to the prosthodontist because it determines the antero-posterior inclination of the compensating curve. The function of that curve is to keep the occlusal surfaces of the teeth at right angles to the line of closure of the mandible. It is important to the stability of both dentures and to their efficiency that the occlusal surfaces should be always at right angles to the line of mandibular closure. If, as in diagram 2 of this picture the opening

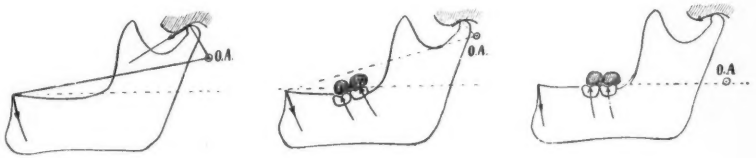


Fig. 26

axis is near the head of the condyle, the occlusal surfaces must be arranged in a relatively steep curve, so that the mandibular molars may close at right angles to the upper molars.

If the opening axis is located in the occlusal plane, the teeth need not be set to a curve of Spee. They will function if the occlusal surfaces are kept in the occlusal plane.

In some cases, the abnormalities in the location of this axis are such that the arrangement of the teeth must be very different from that usually seen.

Fig. 27 shows a diagram of a patient who presented for dentures. As dentures made with the usual antero-posterior occlusal curve, like those shown in the upper diagram had repeatedly proven unsatisfactory, a record of the downward inclination of the incisor path was taken, and it was found that, in opening, the mandibular incisor point moved downward and forward. A perpendicular was erected to the record of this path and the condyle path, and the opening axis of the mandible was found to be located far below the mandible itself. The molars were then set in a reverse curve, as in diagram 2, so that the occlusal surfaces of the molars were at right angles to the line of closure of the mandible. The dentures arranged in this way were entirely satisfactory.

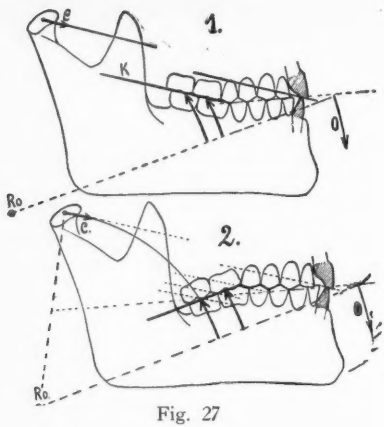


Fig. 27

Fig 28 shows the manner in which records of the incisor point movements can be made in cases where an abnormality in the vertical location of the opening axis is suspected. A horizontal plane was attached to the maxillary occlusion rim and a projecting arm with a graphite point was attached to the mandibular occlusion rim. Half

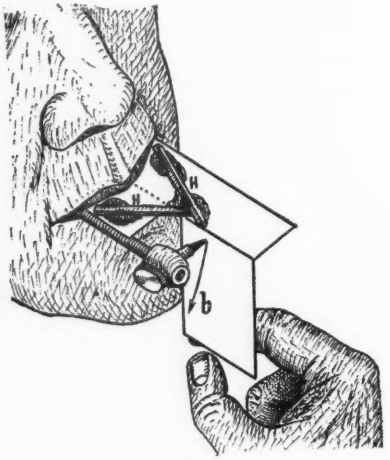


Fig. 28

of the most anterior portion of the projecting horizontal surface was bent downward along the median line, as shown at b, and the graphite point adjusted to be in contact therewith. The arrow shows the usual course of the mandibular incisor point in opening movement.

No articulator can be constructed to reproduce such abnormalities as the last shown without being too complicated and cumbersome for convenient practical use. If the dentist finds a case in which he believes the opening axis to be abnormally low, he can easily make the experiment shown in picture, can erect a perpendicular to the path from the incisor point, so that he can judge about how low the axis is, and arrange the teeth accordingly, increasing the reverse curvature as the axis descends below the occlusal surface.

I have tried to show you in this brief and imperfect manner the results of some of my studies of the past thirty years, and some of the methods which I have found satisfactory in some of the abnormalities which result from the asymmetrical loss of the teeth and the changes which result in the temporo-mandibular articulation.

I have been able to show you only the merest fragment of the studies upon which I have been engaged. If I have made my points clear, they seem to me to justify at least three conclusions:

First—That those of you who make dentures must regard all cases as average and bring all to one arrangement of the teeth, trusting to nature to reconcile any abnormalities with the dentures you have made. In this case you will find the use of any of the good non-adjustable anatomical articulators satisfactory. Your chances of winning are somewhat more than fifty in one hundred, and if you will have the patients grind the teeth in the mouth with an abrasive, they may be seventy-five in one hundred; or,

Second—That you must record the mandibular movements, determine which cases are abnormal, and arrange the teeth as well as you can to the abnormality. This will demand more patience in mastering the technic, but once the technic of operations is mastered, but little additional difficulty will be met in successfully fitting most cases with dentures. There will probably always remain a few cases which can be treated only by the denture specialist, because of abnormalities which are unusual in either degree or character.

Third—That teeth scientifically formed for the average case or for the abnormality must be employed. I should like to enlarge a little on this last point.

The pictures must have shown you that some of the more important details of tooth formation are not the result of chance or of someone's personal liking. They are determined by mandibular functions which can be reproduced only by long and complicated computations. What you have seen is only the beginning of the knowledge essential to correct formations of occlusal surfaces. But I am sure that it is sufficient to show you that there is little hope of your being able to grind with a stone any tooth forms of the required accuracy and efficiency.

Do not fall into the opposite error of expecting the manufacturer to provide you with teeth suited for each form of abnormality. I have been into that subject very carefully and you may accept my assurance that the best thing for your own interests the manufacturer can do is to furnish correctly-formed teeth for average cases and leave to you the changes of form necessary for any abnormalities which the case may present.

I cannot close without expressing my profound pleasure at the great interest which is taken in this subject in this country. It is much greater than in my own country, but it is now reacting upon the dentists over there, and I hope for an awakening which shall equal the awakening here.

And I wish to express to you as representatives of the dentists of America, my heartfelt appreciation for the very distinguished consideration which you have extended to the results of my study, and the very great kindness with which you have treated me personally.

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## Periodontologists Take Notice

Some shells found on the Maine seacoast present evidences of losing their teeth as the result of periodonticlasia. Here is a picture of one

such shell sent in by R. A. Hutchings, D.D.S., of Gardiner, Maine. The center projection resembles a tooth. The shaded area above it closely resembles acute inflammation.

**What shall we do about it?**

# The Wisdom Tooth—And Its Removal

**By Dr. Hector Polk, New York City**

The source of many a sleepless night and restless day can often be traced to the presence of a troublesome "wisdom tooth." Superficial diagnosis in the specified area where pain is complained of may fail to disclose the real cause of discomfort to the patient, because the pain may appear in the regions of the jaw other than that in which the third molar is located. Due to this deceitful reflection of pain, teeth are often needlessly extracted when a simple examination would have brought to light a diseased wisdom tooth as the sole source of annoyance.

Quite recently a patient called at my office complaining of pain in the region of the upper right cuspid. An examination of this area failed to bring to light any condition which would tend to cause uneasiness to the patient. An X-ray examination showed negative results. The usual tests resulted in no response. I examined the third molar and found therein a large cavity facing the distal. Further study revealed a putrescent tooth. After considerable persuasion I convinced the patient that herein lay the origin of all her trouble, although she had previously insisted upon extracting one of the cuspids. Removal of this offender bore out my conclusion.

Inferring from this case and many similar ones, I have drawn the following conclusion: Whenever pain "along the jaw" is complained of, attention should be directed to an examination of the third molar.

At this point it may not be out of place to add a few words regarding the technique of extraction of "wisdom teeth." For the upper jaw the bayonet-shaped forceps are very serviceable provided the tooth is not misplaced. Removal should be effected by lateral motion in the direction of the long axis. Where the tooth is in a misplaced position, however, and the crown can be engaged by the forceps, a simple extraction will usually result. Care should be taken not to distend the mouth too far as the strained muscles will obstruct operations. In the event that the tooth should be fractured at the neck, then it becomes necessary to separate the roots with the fissue bur and engine although some operators prefer the use of the chisel and mallet. Personally, I prefer the former. Under no conditions should the elevator be employed because first, there is likelihood of injuring the maxillary tubercle, and second, because there is the possibility of forcing a root into the antrum.

Regarding the lower "wisdom tooth" all operators are agreed that its extraction is most difficult. The lower "Cryer" has proved to be most serviceable, although with the growth of my practice I am beginning to incline more and more toward the elevator. Where the forceps are indicated, however, the movement of luxation should be anteroposterior so as to avoid breaking. Where the elevator is employed, the

operator should place himself behind the patient for the removal of the right tooth and near the left side for the left tooth. The point of the elevator should be inserted between the second and third molars, with the flat side against the third molar, while the oval side should be placed against the second molar, the latter acting as the fulcrum. The point should be forced downward and upward between the teeth. Forward and downward motion should be exerted to loosen the tooth which is then lifted out in a half circle with the crown tilting toward the ramus. Where the first molar is lacking a wedge should be made from modeling compound and fitted into the space. During extraction the wedge should be held in position with the left hand. Care should be taken not to exert too much force with the elevator, as fracture of the angle of the jaw may result. Continued use of the elevator, although seemingly difficult at the beginning, will speedily prove itself indispensable to the operator.

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## The Proper Spirit

Why should I care if what I see
Is high of price and not for me?
It makes me happy as I pass
To gaze awhile beyond the glass,
And note the costly and the rare
Which cunning hands have gathered there.
I pause and pore, and weigh the worth
And drink the beauty; all of earth
Has yielded something precious, bright,
That I may look with sheer delight.

So I am glad that there are pearls
To shine upon the throats of girls;
And emeralds and amethysts
To circle matrons' necks and wrists;
And laces for the old; and muffs
And fans and webs of fragile stuffs;
And gowns of regal sweep and line;
What matter if they are not mine?
Some other woman still may buy,
More eager and more rich than I.
My joy comes now with dreaming, blent
With hoping. So I am content.
For who can tell? These things may be
Sometime within the reach of me!

—N. Y. Sun.

# Federal Examinations and Interstate Reciprocity

By Hal O. Cowles, D.D.S., Oklahoma

The State Board of Examiners have been the spur to the progress of modern dentistry. It was because of the lack of uniformity in methods, unequalled educational advantages of various localities, and the laxity with which ordinary dentistry was performed that necessitated the enactment of State Laws to regulate and control the procedure. This has been a stepping-stone to greater and wider achievements, raised the theoretical standard, developed greater skill in operatory processes, and unified the method of practice to such an extent that little variance exists in the east or west, north or south. The point is that all the states have reached an ideality in dentistry which makes for uniformity. This being true, part of the regulations controlling the individual practice or state limitations could be changed to accommodate those for whom the previous and same laws were enacted. Laws are enacted to bring the greatest good to the greatest number. No law can be greater than the necessity which stimulated its enactment, and no law should be utilized by a select few after it has reached its ultimatum.

Conditions have so changed, that in the process of dental evolution it is each man's privilege to demand wider latitude for his locality of practice. Notwithstanding a number of minor prejudices it is the consensus of opinion of the majority of dentists that we need interstate reciprocity and a board of federal examiners. The former for the practitioner, the latter for the student just venturing forth on his career.

Interstate reciprocity could be under control as follows: Allowing any regularly licensed dentist to change from one state to another upon his application to and from the Boards of each state of his selection, and (2) their approval of the application; (3) the payment of a fee commensurate to the amount ordinarily assessed for taking the examination. In this manner changes would be made with due consideration and without the loss of time, heavy expense and uncertainty of the outcome of the examination. It would necessitate a high standard for the individual to secure the approval of both Boards for his transference.

Personalities have prevented many good men from passing Boards rather than low grades or poor workmanship.

The Board of Federal Examiners for the recent graduate, and the selection of the state of his choice and the choice of any other state by the same methods as apply to interstate reciprocity. This would give the young man an opportunity to appear before an unbiased, unprejudiced Board, who would play no favorites.

Does it not appear that a school having observed a man's adaptability, perseverance, character and nature for four years would be in position

to determine his fitness as a dentist to a greater degree of exactness than a Board of Examiners, who rush from busy lines of practice and devote from four to six days in fevered impatience, finally basing their calculations on a handicapped, excited boy doing his poorest work? At least, credentials from such an institution should bear some weight, should possess some prestige, should be given due consideration. This is not so at the present time.

The young man or woman enters the dental college with Uniform Entrance Requirements.

The school is uniformly regulated as to theory and operatory systems.

The student is graduated with uniform requirements after being passed by a uniform Board of Curators.

Isn't he entitled to a uniform examination by uniform examiners?

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## An Improved Method for Flasking

**By Victor H. Sears, D.D.S., Salt Lake City, Utah**

The following technic requires less time, is cleaner than the method generally used, and requires no heat up to the point of packing. A fine grade of plaster and soapstone will be found necessary for perfect results.

All of the soft carding wax should be removed from the teeth before they are set up and the wire holes of the diatoric teeth should not at any time be filled with wax, although no precaution is necessary to keep the wax from the large holes in the centers of the teeth. This will require no change in technic unless you are in the habit of melting or forcing hot wax into the teeth as they are set up.

Where a rigid base plate is used, care should be taken to remove any part of the base plate which might interfere with the easy removal of the cast from the base plate. Seal the tryin slightly along the margins, wax exactly as you wish the finished denture to be, and gloss the surface of the wax in the flame. The mouth blowpipe is handy for this work as the flame can be accurately directed. With a sharp instrument cut the chilled wax to a definite margin around the gingival, and cut well away in the proximal so that the investment will hold the teeth firmly in place.

Now rub a fine quality of soapstone onto the surface of the wax and invest the case in the lower part of the flask as usual. When the plaster has set, rub soapstone on the investment to make separation easy.

For pouring the top half of the flask, if the regular plaster is not of fine quality, use any preferred form of fine plaster to cover the wax and fill the rest of the flask with ordinary plaster. The surface of the

vulcanized rubber will be no smoother than the surface against which it is vulcanized. For this reason a fine grade of plaster should be used in pouring the second half.

As soon as the investment has set, the case is ready to separate. The heat evolved in the setting of the plaster is sufficient to soften the wax to the bending stage. In separating the halves of the flask the cast will come free from the baseplate and, due to the soapstone coating, the wax will pull away freely, leaving the investment clean and ready to pack. Unless the flask was heated it will not be necessary to run hot water around the teeth to free them of wax. In fact, the vulcanized case comes from the flask smoother if the wax is pulled out dry.

The half of the flask containing the cast should remain cold, but the half containing the teeth should be heated unless cold pack rubber is used.

In closing the flask to make the test, dip a piece of percaline in soapy water and place it upon the cast to make separation easy. If the cast is cold and if the case is not left in the press too long, there is no danger of the rubber squeezing through the percaline and sticking to the cast, but if there is fear of this, first place a sheet of tin foil on the cast before covering it with percaline.

Press the flask together, then open it and remove the percaline which, having been soaped, will easily pull away from the rubber. The imprint of the percaline will be seen on the entire cast surface of the rubber if enough rubber was used. Add more if necessary and test again. Before closing the flask for the last time cut away all visible excess and rub the cast as well as the cast surface of the rubber with soapstone. This will leave the cast surface of the vulcanized case smooth and easily cleaned.

For closing the flask, long continued spring pressure should be applied, and the flask may be heated to any temperature short of vulcanization. The flask should be so constructed that it can be seen when the halves are fully pressed together. When the flask is fully closed the case is ready for vulcanization.

After the case is vulcanized remove it from the flask and brush it well with a stiff scrubbing brush. Except for the excess rubber and except for a little carving around the teeth the plate will be found smooth and ready to polish. By this method the palate may be made of a thin, even thickness, and the festooning may be done in the wax without the use of tin foil.

# The Hemoglobin Index as an Indication of Oxygen Need During Anesthesia

By Dr. W. I. Jones and Dr. Clayton McPeek, Columbus, Ohio

(Extract from Bulletin No. 7 of the National Anaesthesia Research Society)

Researches at the front during the world war by Goeffrey Marshall and W. B. Cannon showed that in the presence of shock and hemorrhage that anesthesia, to be safe, had to be associated with high degrees of oxygenation. Marshall found that soldiers with a decreased hemoglobin index, readily collapsed under stovain spinal anesthesia and Cannon found that the oxygen need for safety was in direct proportion to the degree of shock, and was most effective when given with nitrous oxid and morphin. With these researches in mind an investigation has been begun in the physiological laboratories of the Ohio State University Medical College to determine, if possible, some definite and fixed ratio between the hemoglobin index and the oxygen need during anesthesia.

This investigation is expected to show clinically that poor risk patients should be given the benefits of optimum oxygenation from the very beginning of anesthesia instead of the customary minimal oxygenation demanded by the patients' symptomatic reactions. This is by way of a preliminary report. The present experiments are being conducted on guinea pigs with nitrous oxid anesthesia. After having determined the proper and safe degree of oxygenation in normal sets of pigs and having charted the nitrous oxid-oxygen percentage curves, the pigs were exsanguinated to varying degrees and then reanesthetized.

It was then found that the same proportion of gases that were safe for anesthesia in normal animals were dangerous and fatal to those that had been exsanguinated. In fact it was readily possible to determine by the reactions of the exsanguinated pigs that a blood loss of 20 per cent demanded 3 to 4 times the degree of oxygenation required by the normal pig. This is an indication of the necessity for using increased oxygenation with nitrous oxid, in the presence of hemorrhage occurring shortly before operation, as in the wounded and in ruptured ectopic gestations. The experiments will be continued to include all other anesthetics as well as the determinations of oxygen need in relation to the hemoglobin index in conditions of shock, anemias, sepsis, myocardial degenerations, and acidosis.

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## Conscience

A recent book dealing with the subject of "Ethics and Natural Law," says: Desires of body and mind are not necessarily developed from one another; often we become aware of a conflict between them, and that awareness functions as "conscience."

## Death of Theodore G. Lewis, D. D. S.

In the death of Dr. Theodore G. Lewis on November 28, 1920, the dental profession lost one of its respected members. He was born in Burlington, Vt., December 14, 1836, thus rounding out a long and useful life of 84 years. From the place of his birth his parents removed to Buffalo, and his early education was received in the common schools of that city.

He became interested in the study of dentistry, and eventually went to Philadelphia where he attended the Pennsylvania College of Dental Surgery (now U. of P.) and received his degree of D.D.S. in February, 1862.

He took up the practice of dentistry in Buffalo with his father. After the father retired he continued with his brother Angelo C., who was also a dentist.

Dr. Lewis always leaned toward the prosthetic side of dentistry. His father was more or less of a mechanical genius, so Theo. G.'s talent was probably inherited. Later in life he became deeply interested in mechanics, and in 1873 was General Manager of the International Industrial Exhibition, given in Buffalo under the auspices of the old Mechanics Institute.

At the meeting of the Buffalo City Dental Association held Sept. 4, 1865, also in October of the same year at the meeting of the Western New York Dental Society, Dr. Lewis first publicly exhibited the original automatic plugger. Subsequently Snow & Lewis commenced the manufacture of the instrument, and since 1867 this and other Lewis inventions have been continuously manufactured by the Buffalo Dental Mfg. Co. Since 1891 the Company was operated under his presidency and he gave continuous and personal supervision to its output. His wide activity and intelligent research in the field of dental mechanics are indicated by the number of dental appliances bearing his name as inventor or designer.

Dr. Lewis indulged in several hobbies, among them being the following: Music; Vases; Etchings and Paintings; War Medals and Decorations of Honor; Oriental Rugs. His personal Library contained books of reference in relation to all his hobbies. The Lewis Dental Library at the Grosvenor Library was turned over upon retiring from practice, and since kept up to date by his continued donations.

The Doctor is survived by a widow, Catharine M. Lewis, a son, daughter and two grandchildren; also a brother, James V. Lewis. He was an active member of the following organizations: Sons of The American Revolution; Albright Art Gallery; State Historical Society, and The Dental Societies.

# DENTAL LAWS

## A Survey of Dental Laws

By Alphonso Irwin, D.D.S., Camden, N. J.

A GENERAL survey of the subject of Laws is opportune at this time. We will proceed with some definitions based upon practical knowledge, every-day experiences, and the nature of queries addressed to us.

### Salient Features

*Police Regulations.* Legislative, social and industrial activities make the police regulations of a State of vast interest. Dental Laws as well as other laws should be subject to intensive study.

*Publicity.* The Searchlight of Aroused Modern Intelligence, should be cast upon such laws. Unmuzzled publicity should be given to all laws. The judgment of no *one man* or selected body of trained men is infallible for a Republic. Hence the commonwealths should be consulted.

*Simplicity.* Moreover, the object of dental laws should not only be made known, but the acts themselves should be reduced into their simplest form, in order to facilitate publicity. The general practitioner of dentistry will then understand them better, and become much more likely to comply willingly with the conditions imposed upon him. The enforcement of the law will also be hastened in obstinate cases, by simplicity of diction, because simplicity of meaning conduces to directness. Intelligent interpretation of the intent of the whole law is needed to untangle the seeming knots of legal words. If the indexing of co-related topics into appropriate chapters and sections, and a logical sequence, were observed in the arrangement of sections into sub-sections, provisos, paragraphs and sentences (which are lacking in so many dental laws), in future acts, it would aid simplicity, and thus open the way for a better understanding of the laws themselves.

There are certain provisions of these police regulations which are of more importance to the dental profession than are the others. A score or more of other provisions may be excluded from his knowledge, and yet a dentist may enjoy a certain degree of prosperity. They need widespread publicity, however, specifically among dentists and allied interests, in order that the rights, privileges and restrictions imposed by them may be respected, utilized, and enforced with the least degree of friction possible.

*Essentials.* These ten provisions may not only be isolated from the context to clarify the meaning of a statute, insure brevity, and promote harmony among the dentists themselves; but accurate information concerning these ten major provisions of the dental law is absolutely essential to the dentists. Without it they are dead sure of getting into trouble, being put out of business, subjected to fines or imprisonment, or both, sooner or later, in their attempts to secure a practice. All of the other points embodied in Dental Statutes are of great interest to the pedagogue, the examiner, and the lawyer, yet the lay dentist may practise without possessing much knowledge of them.

*Ignorance.* At the same time the trite saying must be heeded, "Ignorance is no excuse for the violation of the law." The time is past when culpable ignorance of the law upon the part of a dentist is condoned. Hence any *slight* in the training of the dentist, concerning the essentials of the law, as a part of his early professional training, should not be tolerated for a moment.

*Classification.* The most salient features contained in the Civil Code, classified as Police Regulations (for the Dentist), are (1) The Polity of States; (2) Fundamentals of Law; (3) Boards of Dental Examiners; (4) Licensure; (5) Examinations; (6) Reciprocity; (7) Registrations; (8) Assistant Dentists' Acts; (9) Dental Hygienists' Acts; (10) Prosecutions, Fines, Penalties, and Punishments.

*Indexing.* This topical arrangement of the subject-matter of Dental Laws should again be resolved into appropriate chapters, sections, sub-sections, sub-divisions, provisos and paragraphs, as previously indicated, but the salient feature is designated in the titles quoted.

The police statutes are given priority over Dental Jurisprudence, because a dentist must first comply with these regulations before he can enter the profession and be subject to or enjoy the powers conferred upon him by the exposition of Dental Jurisprudence.

*Dental Jurisprudence.* If a dentist is familiar with these outstanding features of the laws enacted in the State where he proposes to locate, he may get along without any legal jolts. If he should broaden his knowledge by acquiring a general idea of the other provisions of the police regulations functioning in his State, he will become still better prepared for emergencies. But if he is sufficiently ambitious to possess specific knowledge in regard to the underlying principles of Dental Jurisprudence, he will become both fore-warned and fore-armed against any possible future legal contingencies. Accurate legal knowledge is indispensable to the dentist in this age, who would conduct successful practice of the highest order; in fact, the man nowadays who would conduct *BIG* business without a definite knowledge of the laws governing such business, would assume suicidal risks.

*Legal Sharks.* So the dentist who enters upon practice without being well-grounded in the principles of Dental Jurisprudence, courts litigation. He is ill-fitted to cope with the contentions of scheming and unscrupulous clients.

*Classification.* The ten salient features of Dental Jurisprudence may be summed up thus: (1) Legal Responsibility, Rights and Powers of the Dentist; (2) Anaesthesia and Legal Consent; (3) Contracts, Liabilities; (4) Malpractice, Infections; (5) Administrative Law; (6) Business and Professional Relations (Compensation included); (7) False Representation; (8) Expert Testimony (Identification included); (9) Special (such as Statute of Limitations, Restraints of Trade); Presumptive Evidence; (10) Court Decisions, Verdicts, Criminology. Patent Laws belong to a category of their own kind. They require attention by a Specialist upon Patents, and separate consideration.

*Sub-Divisions.* These subjects should necessarily be separated into appropriate sub-divisions to cover the range of the law. The ten salient features of the police statutes named, and these most trenchant features of Dental Jurisprudence, constitute principles of the law which are of infinitely more *vital* interest to the dentist than seems to be generally realized.

*Licensure.* The laws concerning Dental Licensure are liable to frequent changes; for instance, over forty dental laws in the United States have been passed, amended, or repealed, within a decade. All the dental laws of our country have been changed in a quarter of a century. Standards for examinations have been advanced in every requirement.

*Stability.* Dental Jurisprudence presents a sharp contrast to the instability of the police regulations. It has remained the same in regard to its most vital features, and it is safe prediction that by the very nature of the principles involved, the tenets of Dental Jurisprudence will remain the same indefinitely. Successive Legislative changes cannot abrogate them. Therefore the stability of Dental Jurisprudence should appeal to the ambitious dentist as an additional incentive to acquire the mastery of the principles involved in this specialty of the science of laws.

International and Foreign Laws, in their relation to the Practice of Dentistry, are of momentous concern to the cosmopolitan dentist, but their consideration also requires the services of a specialist to explain them. When we make known that there are over one hundred foreign dental laws, besides the International Laws, parts of which the alien dentist should be familiar with, the extent of the subject may be

computed. The stability of the foreign dental laws is much greater than in this land.

The interests of the dental profession should be centered upon the laws underlying, (1) Police Regulations; (2) Dental Jurisprudence; (3) Patent Laws; (4) International Laws and Foreign Dental Laws, in relation to the practice of dentistry. Out of these four divisions the Police Regulations of its own state and nation should receive first attention. This general summary of the subject of laws will be followed by a consideration of Dental Statutes in detail.

# Success Questions

**Number 4**

**By George Wood Clapp, D.D.S.**

C.—a dentist—has just broken in health from overwork. He has accumulated no means.

The wife and a boy of 10 years are left to provide for themselves, for which one is unfitted by training and the other by youth.

He has been intensely ethical all these years. He has worked for fees which a little commonsense should have told him were unprofitable. He has yielded to every suggestion of patients that it was difficult for them to pay proper fees. One of his patients paid five times as much for a pair of shoes as he charged her for a contour gold filling. (He charged her $3.00.)

He has required the most rigid economy of his family, that he might keep his fees as low as possible, that being part of his idea of ethics.

Now the wife must earn enough to support him or he will go to the poorhouse.

Is such a course either successful or ethical?

If you can answer this question in a manner to be helpful to other dentists, your name will be withheld and you will be paid.

# Ethical Parables

**Number 8**

**By George Wood Clapp, D.D.S.**

The philosopher came to the eighth office about the middle of a pleasant Wednesday afternoon in early summer. The dentist was not in, but the secretary looked so competent and agreeable that the philosopher thought he might learn from her what he had so far sought in vain—an illustration of the application of ethics to dental practice.

"You see, I'm only a secretary," she said, "so I don't know very much about it, but I can tell you that conditions in this office have changed wonderfully since the Doctor made a careful study of how to apply his ethics. He used to work so hard for such long hours, and be always worried about money matters, and was tired and cranky, so that he lost some desirable patients.

"Then he got the idea of charging what his services were worth, of not rushing, and not working such hours. Now he takes Wednesday and Saturday afternoons off until vacation time, when he goes away for a month. He's about twenty years younger in manner and actions. If you will come in any other day you will find a pretty young man for his years. The patients seem to like him much better now-a-days. He knows just what he wants to do and does it promptly and well. His spirits seem to do them good."

"Has he lost much practice?"

"Not of the kind he wanted. And of the kind he wants more are waiting than he can serve."

"Do the patients complain of the advanced fees?"

"Not any more; they seem to feel that he gives them something that is worth all they pay."

"Is the doctor happier now?"

"Yes, and so is everyone who is connected with him, either in his home or his office."

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Eighth of a Series of Twelve Parables

## The Case of Two Brothers In Dentistry

Have read with great interest your article entitled "Has This Dentist Succeeded?" It is a most remarkable coincidence, but I had just been pondering over a similar problem, having been for a week-end visit to my brother, who practises in a small country town thirty-five miles from the city. Though I am practising in a suburb of Melbourne, I have all the advantages possessed by those residing in the heart of the city, being only four miles from the G. P. O., a twenty minutes' train-ride.

It is interesting to compare the careers of myself and my brother, because we both started practice on "our own" at practically the same time, he in the country, I in town. After four years' practice he is much better off financially than I am, though I have a larger practice and a much superior equipment. So successful has he been that he is able to make considerable investments outside his business, and thus has not got all his eggs in one basket as I have. I attend all society meetings, use the latest methods, and am constantly improving my methods and adding to my equipment. My brother tells me I am "over capitalized." My latest "luxuries," an operating unit and an electric sterilizer he says are very nice, but quite unnecessary. He refuses to use the new approved impression methods, anatomical articulators and typal form teeth, as used by me, because he says his patients are quite satisfied with diatoric on the plain line, for which he gets little over half the fee which I get, though really making as much or more profit than I do on mechanical work. He is happily married, but I have had to postpone my marriage until I have more of a bank balance to enable me to furnish a house in city style.

I believe him to be conscientious, but he is in a groove, and will be practising the same dentistry in ten years' time, whereas I hope to improve. My latest desire is to possess an X-Ray outfit. I did not tell my brother that, as he lectured me sufficiently on spending so much money on the Unit, and I did not wish to incur his derision further by mentioning the X-Ray idea.

At college I always did my best work, and I do now, often putting in much time for which I don't get paid, as in finishing and polishing fillings and inlays. I admit I am not strictly business-like in running my practice, but I love my work—it's my hobby. My brother, on the other hand, looks on his work purely as a means to earning a living. He gives his patients good value for their money, and is strictly business-like. Our friends and relations look on him as a much more successful man than myself, though they mostly come to me to have their mouth attended to. They praise my work, and tell me that if I was as business-like as my brother I would make a fortune.

# Success Questions Answered

By Dr. Nemo

"B. is a dentist with a wife and two small children. He is 35 years old and in good health. He earns $3,000 per year net over office expenses."

"What economic responsibilities do the wife and children place upon him?"

"How far is he bound to provide for their support if he dies before they are able to take care of themselves?"

"If Mrs. B. is a good wife and mother, how far is he bound to provide for her support if he dies first?"

"If he dies before he makes provisions for his family and leaves the chances for support and a good education to the mother's earning ability, was he a success?"

When a man marries he takes upon himself a solemn duty and obligation to give his wife a comfortable home, proper food and respectable clothing. He is also obligated to provide for her future in the event of his death, insuring her a competency sufficient to live decently. This is a plain business proposition to say nothing of its ethical side.

When a woman marries she waives her possibilities as a wage producer and becomes a home maker; not only that but she waives her possibilities to accumulate a competency for her old age. In return for her efforts as a home maker she has a right to expect from her husband the necessities of life which she could have earned for herself if she had remained single, plus a competency for her old age which it would have been possible to have accumulated had she remained single and practiced saving.

Consequently when a man marries he takes upon himself a double duty as wage producer and wage saver, while his wife rounds out the other side of the partnership by assuming double duty as a domestic worker and saver.

It goes without saying that each is morally obligated to preserve the sanctity of the union, to create happiness, contentment and love within the home and encourage social pleasure and recreation as far as their income will permit.

When a man brings children into the world he is morally and legally obligated to provide for their maintenance until they are old enough to be self-supporting. He is also obligated, in the event of his death, to provide a reserve fund sufficient for their necessities of life until they become self-supporting.

His children also have a right to expect an education which will fit them for the ordinary vocations of life and one sufficiently thor-

ough (a high school course) as to prepare them for higher education should they wish to undertake it in future years.

If financially able, a man owes it to his children to give them a higher education which will fit them for the more dignified walks of life, providing they wish it.

Any man who dies and leaves his wife's future or his children's future, up to their maturity, unprovided for, has either had poor health, financial losses or has been unsuccessful—or all.

"Can he live comfortably in a town of 5,000 people, not owning his home, and provide for the future of his family on $3,000 per year?"

He can! providing he is willing to practice economy, stay on the job and cut out false pride; and that his wife is willing to work, is economical, a good buyer, and handy with the needle.

In the following discussion we will assume that all of this is the case; that they live in the average small city; that their two children (a boy and a girl) are aged respectively 2 and 4 years; that the husband's net practice remains at $3,000 per year over a working period of 20 years, or until he is 55 years of age.

It is extremely difficult to make up a yearly budget extending over the next 20 years; however, we will assume that the present high prices will continue for 3 years and that they will then gradually decline to within 15 per cent. of the pre-war prices; at which point they will remain for the balance of the period.

YEARLY BUDGET

| | |
|---|---|
| Clothing—father | $ 150 |
| Clothing—mother | 200 |
| Clothing—children | 350 |
| Rent at $30 per month | 360 |
| Heat and light | 100 |
| Food at $12.50 per week | 650 |
| Servant—2 days per week, at $2.50 per day | 260 |
| Life insurance premium on $10,000 policy | 130 |
| Doctor bills | 50 |
| Replacement of house furnishings | 50 |
| Incidentals | 200 |
| Total | $2,500 |

(NOTE: The life insurance would be a 20-year term policy. This is the cheapest form of life insurance, meaning that protection is bought at the lowest price and that no reserve or endowment is created. For 20 years the premium (at 35 years of age) would be between $120 and $130. At the end of 20 years the policy would be discontinued, as it had served its purpose during the saving period. The annual allotment for children's clothes is averaged for the 20 years at $350. While the children are young they would not require this sum, and any unexpended balance would be placed in the savings bank at 4 per cent. interest

and credited to this particular account. This also applies to unexpended balances of the other items and creates a fund for emergencies or unusual demands from time to time.)

With a net income of $3,000 and a yearly budget of $2,500 it will be possible to deposit $500 in the savings bank each year. At the end of the third year withdraw the entire amount ($1,500) plus $60 accrued interest at 4 per cent.

A comfortable six or seven-room house, with enough ground for a small garden and chicken yard, can be bought for $5,000. The $1,500 savings is paid upon the property and a building and loan mortgage of $3,500 negotiated. The $60 interest derived from the savings will cover the title deeds, guarantee search, etc.

The annual building and loan dues at $35 per month will be $420; taxes and water rent will average $50 per year; fire insurance $10; repairs to house $50—making a carrying charge of $530 per year.

This is $170 more than the flat rental previously paid, consequently after the third year instead of being able to save $500 per year it will only be possible to put by $330.

At the close of each succeeding year the annual savings of $330 should be invested in guaranteed first mortgages upon real estate, or some sound public utility or industrial bond bearing 6 per cent. interest. These are always obtainable in denominations of $100, $500 and $1,000.

Twelve years after buying the home the building and loan mortgage will mature and the property will be owned free and clear of incumbrance. The carrying charge will then be reduced to $110 per year (taxes $50; fire insurance $10; up-keep $50). Consequently $420 per year may be added to the savings, increasing it to $750.

At the end of 20 years of work the family will have saved $7,710, and the interest derived therefrom will aggregate $2,943, making an accumulated capital of $10,653, bearing interest at 6 per cent.

In arriving at the above only simple interest, computed yearly, has been figured. If compound interest is allowed, as well as compound interest upon unused budget balances, the capital will be considerably increased.

In addition to this the family will own a home in good repair, the children will be aged respectively 22 and 24 years, through grammar and high-school and making their own living. In the meantime the wife and children have been protected by the father's life insurance to the extent of $10,000, and at all times have a substantial equity in their home.

How many professional men at the age of 55 have $10,653 invested at 6 per cent., a $5,000 home clear and free, and have reared and

educated their children? Not only that, but during their working years have had a comfortable home in the congenial surroundings of a small town where their children are brought up in a natural and wholesome environment.

If the doctor—at the age of 55 feels that he would like to take life a little easier he can cut down his professional work two-thirds, holding only enough to net him $1,000 per year, which with his $600 annual income would allow $1,600—upon which the elderly couple could live comfortably and grow old gracefully.

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## Dentists and Their Business Troubles

By Dr. J. P. L.

I have read and re-read your success questions on page 432 of the DENTAL DIGEST. You speak of five hundred dentists in one large city who have proved themselves unworthy of financial credit. Here are your questions:

1. Are these dentists successful? 2. Can they be fair to their profession and their patrons while they are in this financial condition? 3. Are they a credit to themselves and their profession? 4. If a chain is no stronger than its weakest link is a profession stronger than its weakest representatives? 5. What is success in dentistry?

To the first question I would say No; and this opens up the whole subject by the one word Why, which we will later try to answer.

To the second I would say No; they cannot be fair to their profession or their patrons, and I would extend this question and say they cannot be fair to themselves, their wives and families as regard the present or the future.

To the third, they are certainly no credit to themselves or their profession.

To the fourth, the chain is certainly no stronger than its weakest link, and one trouble with dentistry is that we have so many weak links.

To the fifth—this opens the question again—what would be success for one man might not be for another.

Why are those five hundred dentists not financially successful?

I have practiced in the country about twenty-three years; there are about forty dentists in my town now, and I want to give you my personal experience as well as my experience in coming in contact with these dentists. I have been president, vice-president and secretary of our local Society, as well as a member of the State and National Dental Societies. It would seem that I am hard on these five hundred dentists, but I want to add one more to the list and that one is myself. For the first eight or ten years of my practice I was open to all the charges now

made against them. I lacked the back-bone and ability to conduct my affairs on a business as well as a professional basis. I tried to do the best thing for the patient, but I was absolutely ignorant of the cost of production, ignorant of the amount of time consumed, and did not know how much salary I should have. Work was done at so much per filling; an amalgam filling that took one hour to complete brought no more than one that took only one-half hour; no account of time was kept, and I did not know why any charge was made, only that it was the custom to charge a certain price.

I remember when first starting in the country I consulted my neighbor dentist of twenty years' experience, and he told me that the charge for devitalizing and filling a molar with amalgam was two dollars and fifty cents. I kept to this price for a number of years, and needless to say all the operations of this kind were done during that time for nothing. Then there was the habit of extracting teeth for nothing when a plate was made. Think of a dentist extracting two to twenty teeth for the privilege of making an artificial set for ten or twelve dollars.

Again, the habit of cleaning teeth regardless of the time it took, for one dollar or a dollar and a half. This operation did not bring me laborer's pay. Fifty cents for extracting a single abscessed tooth, no charge for after treatments, money lost, working cheaper for children than for adults. I was doing an injustice to myself, making examinations for nothing, giving my time away, the only thing I had to sell.

Then when it came to operations that should pay well, I was inserting good amalgam fillings that lasted ten years and more for one-third the price of a straw hat lasting only four months; making good artificial sets of teeth at about one-third the price of a suit of clothes.

The same with gold crowns, making and setting one lasting ten years for the price of a pair of shoes; good gold fillings as low as three dollars that should bring twice as much. I would have to insert two of them for the price of a derby hat. I seemed to have no conception of the value of time or of comparative values.

How did I get out of the rut? Simply by keeping a strict watch on the clock. But I did not make any startling strides such as you read about in the magazines. It was no easy matter to raise the price of a silver filling from one dollar and fifty cents to four dollars. This was particularly so with patients that I worked for before. It took all the courage I had, but it came by degrees. I speak of the raise on the filling, but the charge if made according to time it might be four dollars, more or less. As said before it did not come without a struggle, and caused a falling away of a certain class of patients, but it also lowered my material bill and I am getting more out of my practice than ever before.

I floundered around a good many years working in a haphazard

way, and firmly believe there are hundreds of dentists doing the same thing today in Illinois.

Under former circumstances how could I be fair to my patrons, when on account of my pinched financial condition I had to cast around to buy the cheapest material and the cheapest equipment to do their work? How could I be fair to myself, working nights and Sundays, hurting body and soul trying to keep them together? And above all, how could I be fair to my faithful wife? I could make a sacrifice by wearing last year's suit; she would willingly wear last year's dress, but suppose a man in this condition should be suddenly called out of this world, this faithful wife would be left to shift for herself; not a very pleasant thing to contemplate.

If the dentist was working for paupers it would be a different proposition. The fact is that wages and salaries have been raised throughout the United States almost one hundred per cent. The dentist contributes his share, therefore he should not hesitate to raise his fees accordingly. Street car fares have been doubled in this town in the last few years in order to double the conductors' wages. The dentist indirectly helps to pay this double wage, and if the conductor comes to him for dental services why should he not pay the dentist an equal raise in fees?

I promised to give my experience of coming in contact with other dentists. I am still a member of all the Dental Societies in my town and county, and am on friendly relations with all the members. Some twelve years ago we tried to adopt a minimum fee bill; it was based on so much per filling and so much per piece for all kinds of work; no one offered any explanation why such charges should be made; one of the oldest and best men at the meeting said the way to get good fees was to ask for them; this was the extent of his speech.

Some years later we had a paper on the cost of conducting a dental practice; nothing was said about fees, leaving it to each man to figure out for himself how much he should charge. It was a hard proposition to get a free, frank and open discussion on the subject.

Individually I approached men on the subject; here are some of the answers: "Nobody can teach me how to run my own business." "The fee question is one for each man to settle for himself." "Well, if the public are robbers and charge twice as much as they used to do, that is no reason why a dentist should be a robber." The last one said he was going to quit the business.

About two years ago I read a paper on fees before the Northern Dental Society. Before the meeting I sent out a dental questionnaire to sixty of our members. Thirty-seven of those members would not answer. Twenty-three did. Of those twenty-three, only four or five kept any record of time, and this only in part. This shows that the system of charging so much per operation, without knowing why, is

still in vogue. The worst of it is that those needing the enlightenment are the last to come forward.

A great many dentists are blessed with broad views and can get along fine, but I believe the rank and file of the dental profession leave college with a very poor conception of business. They lack the knowledge of what it costs to conduct business, and they lack the knowledge of comparative values, often giving away valuable service for a mere song. As a body they lack confidence in each other, and like a balky mule are neither to be driven nor led. You can get one thousand plumbers, carpenters, or painters to declare a minimum price and stick to it. You could not do the same thing with one hundred dentists.

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## Giving Away Time to Get Business

**By J. A. Bowman, D.D.S., Milwaukee**

"If ethics applies equally to all patients, how can a dentist give the cream of his knowledge and experience, free of charge, to persons who do not patronize him, as in examinations and consultations, and charge that service to patients who do patronize him, but are not parties to the consultation?"

To charge for examinations and consultations of patients who do not patronize the dentist, to patients who do, is not only unethical but dishonest.

"Is one who seeks advice a patient?" That depends upon the dentist. If he carelessly looks in the mouth and says you need a filling here, a crown there, come in sometime and I will fix you up—the patient has received nothing which he did not know before, and as the dentist has performed no worthy service he is not entitled to pay. The man wanted to be a patient but the dentist put him off.

But if the patient seeks advice, and the dentist examines the case, making proper use of all the means at hand, such as mouth mirror, probe, transilluminating light in a dark room, study models, makes 10 X-Ray pictures, makes a careful study of symptoms, and thus forms his diagnosis and gives his advice, he certainly is entitled to compensation, and most any patient would expect to pay.

But should a dentist choose to give away such service, it might not be regarded good business, but it certainly would be ethical. I never heard of anyone being charged as unethical because he gave away something of value. A gift is usually regarded as a friendly act.

"If the patient does not pay for that service who is to pay? The dentist?" Of course. "How long can the dentist continue to pay?" Depends upon how much of his time is used for that purpose.

"If the person examined does not pay and the dentist does not pay,

must not the other patients pay the dentist's expense and remuneration for the time involved?" Not necessarily. The dentist by making a practice of Examination and Consultation free, may land many good contracts at his established fees that he otherwise might not get, so that the profits on these extra cases would more than pay for the time on examinations given away.

You must not forget that professional time used, means *gain,* professional time not used means *loss.* If by giving away a little time on examinations, you can make profit from time used, through getting more cases, you have *gained. Loss* from time not used has been converted into *profit* from time used. Some may think this is good business. A parallel is where a merchant gives away samples. Not every one who receives a sample buys the product, but enough often do to make the plan profitable.

"If the patients who were not parties to that service are charged for it, without their knowledge or consent, is the dentist ethical?" No, he is not ethical—he is dishonest.

## Ideas

Ideas have always interested mankind more than facts, because every idea is a challenge, a summons to thought. A straight line is the shortest distance between two points—that is a fact; but no man will die for it. We fight and die only for things that cannot be proved. There is something finished about a fact; it has lost the principle of development; it is dead. Ideas are alive.

# PRACTICAL HINTS

**This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions and Answers should be sent direct to him.**

To Dissolve Modeling Compound.—To dissolve modeling compound and leave the trays bright, boil them in a solution of borax and water. This is much better than sal soda.—G. L. Watkins.

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Sterilizing Hand-Pieces.—The best method I have been able to find to sterilize hand-pieces is to cut up pieces of Ivory soap in the sterilizer. Then put your hand-pieces in the sterilizer and boil them. If oiled slightly on taking them out they will not rust, and you can rest assured they are sterilized.—H. C. Watson.

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Sterilizing Hand-Pieces.—In the October issue of the Dental Digest is a request for a method of sterilizing hand-pieces and I submit the one used in my own practice which has been very satisfactory, and is as follows:

Into a suitable dish which will allow them to lie flat, put enough common vaseline, when melted, that will cover them. Bring to heat on the gas burner just below the point where it begins to smoke, and allow to remain a few minutes. Then take out with pliers, allow to drain and when cool, wipe off with a cloth kept for that purpose.

This temperature is considerably above the boiling point of water and not only sterilizes but thoroughly lubricates, and also keeps the hand-pieces in good working condition.

The vaseline being a semi-solid will not work out on the hands in use as the ordinary oil will.—F. P. Simpson.

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Polishing Porcelain.—Dr. Fred Mallory, of Toronto, Can., contributes the following method of polishing porcelain, which is published here in the belief that it may prove of assistance to many of the readers of the Dental Digest:

"Grind tooth with very fine stone, then with a fine sand paper disk, then with a fine cuttlefish disk, then pumice on felt cone, and then

with paste on felt cone. The paste is composed of white oxide of tin mixed with glycerine to make a paste."

NOTE.—This will undoubtedly give you the desired results, but I find no difficulty polishing porcelain after it has been ground with a coarse stone by polishing the surface thoroughly with medium grade sand paper on the laboratory lathe chuck. The sand paper seems to wear as the surface of the tooth smooths, and you can really get a very good polish in a few moments by the sand paper alone. Then with fine pumice, water and a clean felt cone as high a polish may be secured as anyone could wish.—V. C. S.

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*Editor Practical Hints:*

Referring to the communication of F. T. P. in the DIGEST, saying that one of his patients complains of a burning sensation under his upper denture, would say that if he relieves the pressure of the plate at the anterior and posterior palatine foraminae without relieving the burning sensation, I would next advise him to substitute black vulcanite for the red, of which the denture is now probably composed. I met with similar cases in my practice years ago, and relief was given in the manner indicated. There are certain persons who cannot wear red vulcanite dentures with comfort.—GEO. B. SNOW.

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*Editor Practical Hints:*

In reply to F. C. Secor's question concerning the discoloration of gold fillings in the mouths of some patients, will state that I have had cases under observation where cohesive gold fillings turned perfectly black inside of 24 hours.

I attributed this to be due to a systemic condition of the patient, the system being overcharged with some organic sulphide.

I am neither a chemist nor a pathologist, so if I am not correct, I should like to know why.—LEMUEL COLSON.

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*Editor Practical Hints:*

How soon after extraction should temporary plates be made?

W. G. M.

ANSWER.—I believe that the best results in denture work are obtained where the patient is not allowed to go edentulous for a single day. I get the best results where the buckle and labial process is resected back at time of extraction, gum trimmed to straight clean lines and sutured. Impression taken immediately and cast poured with plaster with setting hastened by potassium sulphate. This may be separated in five minutes and a base plate adapted to the cast of Graft's base plate material. The six anterior teeth are fused to the base

plate. Ridges are built up in the posterior region to establish occlusion with the jaws at normal rest. These base plates are worn when the patient leaves the office maintaining the normal relationship of the jaws, preventing the sagging of the muscles and strain and change in the mandibular joint. With this temporary base plate the patient can go on about his business unembarrassed and suffering much less pain and discomfort; the base plate acting as a splint or bandage protecting the wound in the mouth from irritation from air and tongue and food pressure. These base plates may be worn indefinitely,—from one to several weeks as meets the pleasure and convenience of patient and dentist.

Dr. Gillis, of Hammond, Ind., recommends the immediate vulcanization of rubber base instead of Graft's base plate material. While this requires a few more hours before insertion in the mouth, it may be the best way as Graft's base is not very strong.

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*Editor Practical Hints:*

Patients wearing full upper dentures occasionally complain that owing to the roof of mouth being covered they suffer a loss of taste. The latter, to my understanding, is confined entirely to the tongue, owing to the taste follicles being located there, but am interested to learn if the palate in any way influences taste, and trust may get this information in the DIGEST.—SUBSCRIBER.

ANSWER.—This will be an interesting question to draw out expressions of opinion. I know that they taught me when I studied Physiology in school that the taste nerve follicles are all located on the posterior portion of the tongue, but it has been my experience that people wearing upper dentures, as you report, frequently complain of having their sense of taste seriously interfered with. I have become convinced that some of the nerve endings are located on the palate, and it has been my habit to tell them that the function of the taste nerve endings covered by the plate will be assumed by those nerves further back on the palate and on the tongue which are not covered, in a few weeks or months if they will but have patience. I find that in the vast majority of cases this is the practical result. But if any other reader can give us more scientific or better information on the subject, it will be greatly appreciated.—V. C. S.

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*Editor Practical Hints:*

The open face crown was discussed and condemned in your pages I think, of the June issue. The condemnation of its use, in my opinion, was fully justified. But the *cast* open face crown makes a very good substitute and eliminates all the objections of the open face crown made

in the usual way. The procedure of this technique is as follows, taking for example, a vital cuspid tooth intended as an abutment for a bridge:

Grind the mesial, distal and lingual surfaces, so that the inlay-wax could be removed without being distorted. Then make a groove extending on the mesial, incisal and distal surfaces. Next take a wire measurement of the neck of the tooth and make a narrow band. Fit the same under the gingival margin as you do for a "Richmond" crown and proceed to take an inlay-wax impression covering with wax the mesial, distal and lingual surfaces of the tooth. The band does not come off with the wax impression, but it is removed afterwards and replaced in its proper position in the wax. With a small warm spatula get the wax externally near the gingiva smooth and to adhere to the band. Invest and cast it in the usual way. After casting reinforce the labial surface of the band with a piece of 20 karat solder. If details are carried out, the cast open face crown will prove a strong and beautiful attachment for a bridge. This form of construction could be used in many cases with slight modifications.

E. D. HANDELMAN, D.D.S.

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*Editor Practical Hints:*

Replying to J. Julian Fischman, whose query appears in a past issue of the DENTAL DIGEST, I would say that the open faced gold crown for centrals, laterals and cuspids is one of the best abutment crowns to be made for bridgework. There is less mutilation of the tooth, and with the exception of the ferrule of gold at the cervico-labial aspect of the crown, there is very little gold exposed to view.

Very few dentists can make a perfect open faced crown, at least I see very few that are passable; I use this form of crown most frequently.

The technic of the open faced gold crown is as follows: Grind the mesial and distal surfaces of the tooth until it is no wider than at the cervical, that is, until the sides are parallel. A compass must be used to measure at the incisal and cervical.

The palatal portion of the tooth is ground so as to allow for a thickness of gold at the palatal. The tooth is ground at the incisal to a chisel edge.

An individual impression is taken with Impression Compound in tube impression cup. The model is then poured in hard setting plaster.

The model of the tooth is trimmed slightly and the impression of the palatal portion taken in moldine—Mellotts metal die cast.

Now the important thing is to use the proper kind of gold in the next step. For this purpose 22 K. 32 gauge soft as silver alloyed gold must be used. Cut a piece long enough to cover the palatal and wide enough to wrap around the tooth. When this is stamped up and roughly trimmed to form it is placed upon the natural tooth (after being an-

nealed) and burnished close to the tooth, wrapped around the labio-cervical part of the tooth, burnished close, marked at lap, slipped off and tacked together with 22 K. solder.

This is now replaced upon the tooth, burnished more closely, trimmed to form and carefully removed. It is then taken to the laboratory and reinforced by carefully flowing 22 K. gold over its surface. The crown is now very strong.

The crown is roughly ground to form and slipped on the tooth, the bite taken and the bridge finished. This is strictly a bridge abutment crown, and is not used simply as an individual crown. When used as indicated above it will last for years.—W. H. Reaben, McComb, Miss.

# CORRESPONDENCE

*Editor of* THE DENTAL DIGEST:

At its last regular meeting, October 14th, 1920, the Sangamo Menard County Dental Society, by a unanimous vote, recorded its appreciation of the service rendered the entire Dental Profession by the Editor of the DENTAL DIGEST and the Dentists' Supply Company, through their activities in connection with the recent malpractice suit against Dr. Bauman of New York.

As officers of the Sangamo Menard County Dental Society, we therefore have the pleasure of informing you of this action, and of expressing to you our thanks for the time, effort and money you have so liberally expended in safeguarding the highest interests of dentistry.

Sangamo Menard Dental Society,
GEORGE W. MILLS, *President,*
J. LESLIE LAMBERT, *Secretary.*

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*Editor of* THE DENTAL DIGEST:

The Lane County District Dental Society at their regular meeting voted to write you an expression of their appreciation and deep debt of gratitude for your timely interest in the case of Williams vs. Bauman. It is understood by us that your pages donated in the DENTAL DIGEST, your money spent and time given to the dental profession gratis were the means of erasing this suit, with its evidence, from all courts, and thus no precedent has been established in Law to harass some other dentist in similar position. Also your efforts and valuable time spent to prevail upon the so-called expert witnesses who appeared for the plaintiff, to recant and sign a "Retraction." All of which should be greatly praised by us dentists. For surely you have done well "Thou Good and Faithful Servant," and we hope your reward will be great and substantially expressed by more liberal patronage.

Thus we take this simple means of letting you know that Oregon appreciates your efforts in our profession's behalf.

The Lane County District Dental Society,
W. B. LEE, *President,*
J. D. TYE, *Secretary.*

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*Editor of* THE DENTAL DIGEST:

At a recent meeting of the Bronx County Dental Society, a unanimous vote of thanks was given to you and the DIGEST for the wonderful way you handled the matter regarding the Bauman case.

The records and comments printed in the DIGEST were well worth reading and preserving.

Thanking you again in the name of the Society, I am

Truly yours,

DR. J. F. SCHEINA, *Secretary.*

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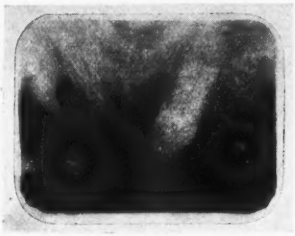
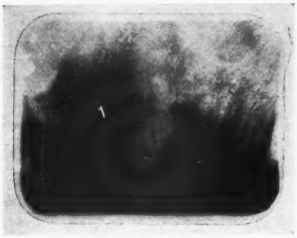
*Editor* DENTAL DIGEST:

Enclosed find X-Ray pictures which may be of interest to the profession. The woman is sixty years old, and has had a bridge here until the laterals, which were crowned and had become loose, were extracted





after removing the bridge. It did not heal, and I took a picture and found the two new cuspids coming in. These teeth will be removed in the near future.

E. H. KERR.

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*Editor of* THE DENTAL DIGEST:

On page 705 of your November issue, I read a "Notice to Dentists and Physicians," by P. S. Coleman, Wilburton, Okla., that if dentists and physicians who have rendered services to ex-soldiers and who are entitled to pay by the government for their services, will write him, that he will have the matter placed before the President for action, etc.

In this connection, I would suggest that Mr. Coleman or someone else whom you might suggest, take up with the proper authorities, for correction, a condition which no doubt affects many practitioners of dentistry as it does me.

For example, I have been a practitioner of dentistry for about twelve years, located in a small city of about 1,000, with a fair country to draw from. Am a graduate from one of the foremost colleges in the United States, have a well equipped office, employ an assistant, am practicing dentistry as approved and up-to-date, am not an advertiser, try

to be ethical, and have been successful after working hard and faithfully in building up a practice.

Some time ago another dentist located here and has since been appointed to work for ex-soldiers at the expense of the government. He has solicited their work by asking them if they have dental work to be done, and if so he will do it with no expense to them, but at the expense of the government. After getting them into his office and making an examination he tells them that they have a great deal of dental work to be done, quoting a price at times as high as three hundred dollars; consequently he gets their work, for what ex-soldier would pay so much if he could get it done without cost to himself? This is taking some of my best patients from me, some for whom I have done work for years, yet I am unable to get appointed myself to take care of my regular patients and keep my practice, although I have had my lawyer place the matter in its true form before the proper authorities with a request to correct this embarrassing situation by appointing me to do a part of this work. We have also sent in a petition, signed by many ex-soldiers who have been my regular patients, asking that I be appointed to do their work, and not be compelled to go to someone who is less familiar with their mouth conditions. I also furnished names of some of the foremost business men in the city for references, but to no avail.

Is not this an unfair condition, and one that should be speedily remedied? I submit this for your consideration and possible help, as it no doubt affects many a worthy practitioner of dentistry as it does me.

Yours truly,
S.

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## Finishing

When a denture comes from the laboratory, it frequently requires some trimming on the tissue side and some picking between the teeth. A sharp scraper and a specially ground three-edged pick are almost indispensable.

Examine the tissue side very carefully. If there is any evidence of the cast having been cut or marred, the area involved should be relieved. One small place of this kind over unyielding tissue may prevent the denture from seating properly. Be certain that the rugae impressions are deep enough.

Scrub the dentures well with a stiff brush in warm, soapy water. Rinse in clear water and restore the luster with a clean towel. When dry, paint the tissue side with compound tincture of benzoin. This increases the adhesive properties of the tissue side and has a soothing effect on the mouth, especially after recent extraction.

Victor H. Sears, D.D.S.

# DIETETICS AND HEALTH

## Common Colds*

The common cold is the most widespread of the communicable diseases. It is *continuously pandemic.* Always and everywhere the common cold is present to a limited extent, and certainly no contagious disease enters the dentist's office so often as this one. We pay little attention to the disease because it is not fatal and there are no good figures to show us what a tremendous loss it really produces.

Let us consider merely the economic loss from this disease. Is it not safe to assume that the average workman loses two days a year from a cold? If this is true then thirty million people who are employed in industry lose a total of sixty million days' work. If you reckon the average wage as $4.00 a day, here is nearly a quarter of a billion dollars lost in wages alone. Add to that the cost of decreased production and the loss from throwing out of employment other people in the same department or depending upon the work of the absentee and the loss becomes truly appalling. And this does not take into consideration the loss of efficiency during the days when the individual works with a cold or the general impairment of health which colds produce; and the figures are for factory workers only.

Are we justified in saying that common cold is not a serious disease merely because it does not produce death? The common cold is an acute infection of the nose, pharynx, tonsils, larynx, trachea or upper bronchi; and how often do neuritis, rheumatic fever, pneumonia and rapidly progressing organic diseases follow these conditions.

The Cause of Colds.—The cold is an infection and not merely a congestion. It is contagious and runs through a family or through a school or through a group or workers just as any other infectious disease. It has not, however, a single cause. There are a variety of bacteria associated with catarrhal infections such as staphylococci, streptococci, pneumococci, the influenza bacillus and the bacillus catarrhalis. Many of these bacteria are normal inhabitants of the mouth and nasal passages and they are doubtless waiting for an opportunity to set up the disease anew when the vitality of the individual is lowered.

* Extract from an interesting book entitled "Hygiene: Dental and General," by Clair Elsmere Turner, and published by Mosby Company, St. Louis.

Catching Cold.—Many people still have the mistaken belief that drafts produce colds. Of themselves drafts cannot produce infections, and a chill is not the time when the infection takes place but rather indicates the period when the cold is becoming more active. When a cool wind reaches the skin of a normal individual his vasomotor system reacts by removing the blood from the skin and thereby lessening the heat lost, and the body further reacts by increasing the heat production. Removing the blood from the skin about the face, shoulders and back of the head will congest the blood vessels at the interior. This may increase the watery or serous exudate upon the inner surfaces of the throat and nasal passages, and bacteria, which may be present normally or which have been recently acquired, find an opportunity to develop rapidly on these congested surfaces. Furthermore if the cooling effect is long continued the temperature of the body is reduced and in this way the resistance is lessened. If the vasomotor system of the body is in poor condition bodily adjustments to changes in temperature are less efficient, and drafts are more likely to produce injurious effects. It is by improving the vasomotor system that cold baths, physical exercise and vigorous health assist in keeping a person free from common colds.

Conditions which cause a continual irritation in the nose and throat also predispose to colds. Chronic catarrh, enlarged tonsils, polypus, deviation of septum and adenoids are examples. No doubt a dirty mouth is more likely to harbor the bacteria which may produce a common cold than a clean mouth. The quality of the air passing over the respiratory passages is also important. Poor ventilation which allows the air to become too dry or dusty will set up undesirable nose and throat irritation. The air should be fresh and of suitable temperature. If the home or work-place is too warm the sudden change of going out into the open will congest the breathing passages. It has been pointed out that in the coldest weather it is the passengers in the stuffy carriages of the train who catch cold and not the fireman and engineer. Arctic explorers have been free from colds while in the far north only to become reinfected by a return to temperate climate where reinfection took place.

Since the organisms which produce cold are almost constantly in the mouth and nose the opportunities for infection are innumerable. We are asked to consider what would be the result if the secretions from the mouth and nose were of a bright color. If each individual shed from these cavities a different shade of an intense red dye it would be appalling to see how quickly the surroundings would take on a rosy hue. The fingers are constantly going to the mouth and nose and would quickly become a deep red color. The handkerchief would become quickly dyed, we would exchange material with the people with whom

we shake hands and the door-knobs, trolley car-straps, our desks, books, and instruments would all acquire the color far too rapidly. Perhaps it would be fortunate if this could happen to us for a day. We would certainly have a revelation as to the amount of care which we should use in preparing and serving our food, and we might wish to abolish the habit of hand shaking.

There are three important rules for the prevention and treatment of colds:

(1) Remember that colds are spread by organisms in the secretions of the nose and throat, and *try to avoid infection.* We should be much more careful in avoiding contact with persons who have colds. We should not let people cough or sneeze in our faces and we should avoid using common eating or drinking utensils. We must educate or train ourselves in habits of sanitation or cleanliness as those words are interpreted under the germ theory of disease.

(2) *Avoid predisposing causes.* Drafts, poor food, extreme fatigue, lack of sleep, and bodily defects lower the resistance of a person so that colds may be acquired more readily. Do not neglect the duty to yourself of keeping in good physical condition.

(3) *When you feel a cold coming on go to bed.* This may seem a severe remedy, but there are many reasons for doing it. Colds are most contagious during the early period and if a person isolates himself in bed he is preventing contagion as well as taking the best possible care of himself. The reconstructive forces of the body work best when a person is resting quietly in bed under proper conditions of temperature and nutrition. The body is rested and strengthened and the danger of increasing the severity of the disease by exposure to cold, damp and fatigue is eliminated. To stay in bed for a day or two when a cold is first coming on is perhaps the best economy of time as well as a "safety first" procedure.

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## An Eternal Problem

If we really could be convinced that we are what we eat, all of us who have even ordinary conscience and intelligence would select our food with the greatest care, says the *N. Y. Sun.* The trouble is, throughout all the centuries, people have been totally ignorant as to the quality of food-fuel which should be selected for the human engine. Even the vast majority of physicians have given very little study to actual food values, some of them, even in this day of pure food agitation, are indifferent and skeptical when it comes to the use of dyes and chemicals in food products.

On the other hand, during the past few years there have sprung up many cranks and fakes, who advertise themselves as "Dietetic Specialists" and claim accurate scientific knowledge as to the exact foods which will increase certain physical and mental functions, and actually influence people's morals, emotions and personal attractions!

Seriously, however, the chemical effect of certain foods is known by wise persons, and is direct and definite. Lentils, so favorably known in the days of ancient Egypt, serve the same purpose as meat—that of making red blood, because they are so full of iron. Prunes, figs and apples are well known to have a very decided purgative effect. Many people who dose themselves almost daily with pills and very strong and objectionable "physics" could maintain excellent health if they ate dates, figs or stewed prunes frequently, or even took a raw apple each night on retiring. People suffering from diabetes are usually allowed all the apples they wish, and also berry fruits.

When one is cold in winter, so that it seems impossible to carry on his daily tasks, he is apt to endeavor to heat the blood by drinking quantities of tea and coffee, or even whiskey. Science tells us that milk is more effective. It is claimed that lemon juice prevents and cures tonsilitis, and that pineapple juice is most effective in throat troubles.

The dietitian usually objects to the cocktail before dinner, which only irritates the stomach. He regards oysters very highly, especially raw ones. Watercress is believed to be absolutely medicinal, as it contains iodine and iron, and it is claimed that even stubborn cases of eczema have been cured by it. Cucumbers, and even pickles, are healthful. Fish is more digestible than meat, and cheese is extremely desirable. They give the body heat and power, which most people think can only be obtained from excessive meat eating. Potatoes should always be boiled in their skins, because of the valuable minerals contained in these coverings. Macaroni is palatable and nutritious; also mushrooms. Turkey meat has 2 per cent more albumen and much more fat than chicken, and is very nutritious. Large quantities of grapes are recommended.

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## The Art of Healing

**By Prof. Arthur Keith, M.D.**

### Decayed Teeth Do Not Heal

There are no parts of the body which can better help us to understand the true nature of the art of healing than those structures with which we have been familiar from infancy upwards—our teeth. That most prevalent of all diseases, caries of the teeth, we all have had ex-

perience of at first hand. One morning we are surprised to find—or, if we are in the happier position of being able to afford regular visits to a dentist, our dentist is surprised to find—a hole or ulcer eating into a tooth without our being aware of the fact, there having been not the slightest warning or pain. Pain comes when the pulp cavity is reached —pain and plenty of it; but that is too late for Nature to step in and give us a preventive warning. If a sore or ulcer had formed on the cheek we should have been instantly aware of our danger and have been able to take measures for treatment. We should also know that, in most cases of ulcer or sore, repair will set in and heal the breach. But a hole or ulcer in a tooth will not heal, try how we will; it has no power of repair. The best a dentist can do for us is to clear out the dead tissue, introduce a stopping, and thus avert the disease. The most skilled dentist in the world cannot heal a tooth, cannot make the wall of the cavity produce fresh dentine and new enamel and thus restore the breach; his failure is not his fault, but that of Nature, because she has not given our teeth, for a reason I will explain presently, that virtue of healing power which she has most bountifully bestowed on all the other structures and tissues of our bodies. You will see the point I am trying to score—viz., that if Nature had not endowed our bodies with the power to heal, neither the surgeon, physician, nor masseuse could have done anything whatsoever for the cure of injury or of disease. They could have done no more—perhaps not so much—than the dentist can do for our teeth. They could only have stitched tears of the skin or stopped holes in the flesh. Conceive our condition if such had been the case; the hundreds of men who had broken bones in the accidents of civil life would be walking the streets in splints for the rest of their lives; every one of us would be covered with stitched cuts—often in want of renewal—or with holes which constantly wanted restopping, or with ulcers ever weeping, or bruises unchangeably coloured as the rainbow. A modern city would be a warren of surgical out-patients had Nature not endowed the rest of the body better than the teeth. Think of the condition of our soldiers at the end of the war if their bodies had forgotten how to heal! If we remember these things, you will see that when we claim a cure we should not forget how much of our success we owe to the bounties of Dame Nature.

## Healing Depends on Cells

Why has Nature been so culpably negligent as to leave our teeth healingless? Is it worth some trouble to look into this matter if only to learn how remarkably prudent she has been on our behalf in all her works. If our teeth had been provided with nerves as freely as our skin, then we should have had warning of the first onset of caries, and could have taken steps to remove the disease at its beginning. But then,

what about cracking nuts, and chewing roots and tough meat, as primitive man had to do? Eating would have been too painful a process to be indulged in. Nature did her best to secure attention to the teeth by awarding the most excruciating of pains to those who do neglect their teeth. Under the circumstances which conditioned her handiwork she could do no more. But lack of nerves does not explain why teeth have no power to heal, although I think that those parts of the body which are most liberally supplied with nerves of common sensation have a better power of healing than those which have a poor supply. The chief reason was that the substance of the teeth had to be made so hard and resistant that it was impossible to introduce into the enamel or dentine those soft living units which we speak of as cells. It is in these living cells that the power to heal lies; enamel cannot mend a breach in itself because it has got no cells; bone can, because everywhere it provides minute but comfortable nests or residences for the numerous living units scattered through its substance. If we would understand the art of healing, then we must know something of the living units in which the power to heal resides.

We must not think that every cell in the human body can play a part in the act of healing. A nerve cell—and it is also so with a cartilage cell—cannot even mend its own body, much less take a part in the healing of a breach or wound; if injured they die. The epithelial cells which cover the skin can, as you know, multiply, spread, and thus cover over any superficial breach of the body. The epithelium which lines the stomach, bowel, windpipe, and other canals and passages of the body have also this power. But the cells which have been furnished with the greatest degree of healing power are those of the white connective tissues—the tissues which bind the skin down to the underlying parts and which join together the various parts of the body. Let us suppose a muscle has been ruptured or torn, such as the biceps of the arm. Blood oozes into and fills the tear or breach in the muscle. Immediately messages go out, of kinds we do not yet know, and summon from the rest of the body millions of white blood corpuscles to the site of the injury—the workmen who have to clear away the débris caused by the accident. What interests us most, however, is the behaviour of the connective tissue cells lying in the walls of the breach. Up to the time of the accident they have been leading placid, passive lives, binding loosely together the fibres of the muscle without in any way interfering with their contractile duties. In ordinary circumstances they would have gone on performing this quiet duty all their days, just as their forefathers had done for endless generations before them. With the accident their disposition and mode of life change radically and suddenly. They take on, as it were, a fury of action, change their shape, begin to divide and breed, giving rise to broods of builders which

are to mend the gap in the muscle. These builders are not poured out as an undisciplined mob; they proceed as orderly marshalled armies. As quickly as they grow out to fill the gap from the sides of the wound they are accompanied by sprouts from the neighbouring capillary vessels, and are thus furnished with the means of sustenance. When the débris in the wound has been cleared away and the gap thus filled with a new army of connective tissue units, the units or soldiers begin to change from an active to a passive state; they shrink and form a cicatrix—a mere connective tissue cement. In this way Nature stitches the torn ends of the muscle together. We admit that the surgeon may expose the torn ends of the muscles, clear away the blood and damaged fragments, and stitch the torn ends together, but even when this is done Nature has still her operation to perform, for the only stitches which ultimately hold are those inserted by those extraordinary cobblers—the connective tissue cells. What rouses these armies of menders to action we do not know. The power to heal is one of the marvels with which living tissues have been endowed. Unless it were so the surgeon would necessarily be a mere cobbler. All we do know is that these living units can do their work unaided by any human agency, but we also know we can hinder them as well as help them. Long ago Ambrose Paré put the matter in a nutshell when he said: "I dressed the wound; God healed it."

### How to Aid the Cells Rightly

The art of healing lies, then, not in knowing how we can heal the human body, but in knowing how we can help the living units of the body to perform this task for us. We have to study and know the habits and proclivities of these microscopic healing units of the body just as closely and well as we watch and note the ways and weaknesses of our best friends. We cannot watch those indispensable healing assistants too closely. John Hunter knew that. Every time he discovered a wound and saw the red granulation tissue building up the gap in the flesh he studied it as a gardener does his most precious bud. He saw that the healing tissue must have quiet and comfort in which to do its work. Think for half a minute what progress you would make in mending a rent in your skirt if some restless terrier kept tugging at the hem. Your stitches would be ripped out almost as soon as you had tightened them. Think, then, of the uphill task that confronts the armies of cells which are trying to make good a tear or rupture in a muscle if that muscle continues to be thrown into action. Nature has foreseen their difficulties and throws the muscle out of action. Hunter observed that if a muscle or tendon was ruptured the patient ceased to have the power to call it into action. At a later stage action and massage may become necessary, but of that we shall speak later on. It was long after Hunter's time that Pasteur and Lister discovered

micro-organisms to be the chief enemies of the healing units. If such enemies can be excluded from the body the armies of healing tissue can proceed quietly about their work of mending; if they are not protected from these invaders they have to fight as well as build. It is like reaping a field of corn with most of the reapers serving as policemen. In this way surgeons greatly improved the art of healing by discovering simply why in some cases the real healers of the body were hindered in their work. Then other discoveries led on to further improvements in the art. It is a discovery of ancient times that the human body, after an attack of smallpox, was immune henceforth from this disease. Jenner found out that he could produce an immunity by vaccinating the body with the lymph of cow-pox. Then later we came to understand that the body of anyone attacked by a contagious or infectious disease was the scene of a widespread and terrific battle between invading hosts of micro-organisms and defensive mobile armies represented by the white corpuscles of the blood. At first the physician could do little more than look on and pray for the defenders to have the best of the fight, but by patient and continued observation he is learning how to strengthen the defenders by the use of vaccines, antitoxins, and other methods of our modern serumtherapy. Here, again, the medical man is not really the healer; that power is inherent in the patient's blood and body; all he can do is to supply such conditions as are within his reach which will give victory to the defensive armies of the body. The best a physician can do is only to hold the lamp while Nature does the mending. But if he knows how to hold it rightly he may well make all the difference in the ultimate result, the difference between recovery and health.—LANCET.

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## Slow-Motion Pictures and the Doctors

As nearly everybody goes to the "movies" now-a-days, it is probable that nearly everybody has seen interesting examples of the so-called "slow-motion" pictures. Pictures taken at the rate of, say, thirty-two a second, and projected at the rate of sixteen a second, will show a noticeable slowing-down action on the screen.

The manager of a Film Corporation has been showing these pictures for some time past, mostly in a way to amuse rather than instruct an audience. It has been found, however, that their application to mechanical and even medical problems is quite practical. Speaking of what can be done in the medical field, the manager of the Film Corporation above referred to said to a representative of the N. Y. Times:

"A series of interesting pictures has been made in an effort to analyze certain actions of the heart under various conditions. Several

twenty-pound bulldogs were the subjects used. The films detected actions of the animals' hearts, certain valves having been scientifically blocked, that could not have been noted by the human eye. 'Analysis of Motion' pictures of this character should prove of great value to the medical profession in enlarging the present understanding of the circulation of the blood and minute actions of heart and lungs.

"One of the late achievements of the camera was in the case of a young woman who was terribly frightened three years ago during a thunderstorm. Up to the time of this occurrence she had been in splendid health, but following the storm she developed a form of hysteria which left her in a pitiful condition. She is constantly in action, thrashing around with her arms, body and legs. In filming this subject the high-speed camera showed the doctors a peculiar and hitherto unknown muscle wave extending from the hip to below the knee. Eminent physicians state that this condition probably exists in all cases of hysteria, but that it had been unknown because of the inability of the human eye to discern the motion."

## The Fault of the Age

The fault of the age is the wild endeavor
To leap to heights that were made to climb,
With a burst of youth and a thought most clever
We strive to forestall and outwit time.

We crave the gain, yet despise the getting.
We want health, wealth, not as reward but dower.
And the time that is spent in useless fretting
Would fell a forest or build a tower.

## EXTRACTIONS

Business is a power, not a name.

A nation deserves anything it lets happen to itself.

An optimist is a person who eats candy off a street stand.

The woman of the hour is the one who says she will be ready in a minute.

He went to see the dentist,
The picture of despair;
He came back with a smiling face—
The dentist wasn't there.

I would rather be born lucky than rich, but I would rather be born rich than not at all.

How would you like to be a gas meter reader and go into thirty or forty cellars every day?

There are not so many slips twixt cups and lips as there used to be when it wasn't so scarce.

He who cures a disease may be the skilfullest, but he that prevents it is the safest physician.

Some time ago they took the shine out of moonshine, and now they are trying to remove the sun from Sunday.

I don't believe that a man who wears a brown derby is necessarily cracked. He may be doing it to win a bet.

A polite man is one who listens attentively to things he knows all about, when told by a person who knows nothing about them.

"Oh, heavens! I swallowed a pin. What shall I do?"
"Well, why make all that fuss over a mere pin? Here's another one you can have."

"I'm sorry that my engagements prevent my attending your charity concert, but I shall be with you in spirit."
"Splendid! And where would you like your spirit to sit? I have tickets here for half a dollar, a dollar, and two dollars."

A university professor in Chicago held out until he found that the driver of a pie wagon received three times his salary.

An income is a funny thing,
I hope that you won't doubt it;
It's hard to live within it, and
It's hard to live without it.

A Charity Organization Society received a gift of one dollar, with the following explanation: "You are welcome to this. I can't buy anything with it."

Another reason has been found to explain the old riddle, "Why does a chicken cross the road?" It's this: "A show window full of nice hats and a big mirror."

"Marry you? Well, the very idea! I wouldn't marry you for $50,000."
"But, my dear girl, I'm worth a million."
"Oh, well, if you insist, I suppose I'll have to humor you. Let's go."

The hobo stopped at Shady Brook farm.
"I'm looking for a job," he said.
"How much money do you want?" asked the farmer.
"How much you got?" asked the hobo.

(Mrs. Binks)—Does your husband always remember the anniversary of your marriage?
(Mrs. Jinks)—Never; but I remind him of it in January and June, and so get two presents.

"We've had a mighty dry summer." said the Senator from Minnesota, who was exhibiting at the country fair.
"Dry summer?" asked Farmer Dan, who lives in the state of Texas. "Man, you ought to come down to my country. Why, we have bullfrogs down there eight years old that haven't learned to swim yet!"

A negro who had an injured head entered a doctor's office.
"Hello, Sam. Got cut again, I see."
"Yas, sah. I done got carved up with a razor, Doc."
"Why don't you keep out of bad company?" said the physician, after he had dressed the wound.
"Deed I'd like to, Doc, but I haint got enough money to git a divorce."

# Benzyl Alcohol For Toothache

**David I. Macht, M.D., Baltimore**

In 1918, I announced my discovery of the local anesthetic properties of Benzyl Alcohol, or Phenmethylol, and published both pharmacologic and clinical data on the subject. I found that solutions of that drug in concentrations of from 1 to 4 per cent by volume, in physiologic sodium chlorid solution or in distilled water, furnished a satisfactory local anesthetic for general surgical work, on the one hand, and that benzyl alcohol was at least forty times less toxic than cocain, on the other. It was found that solutions of phenmethylol produced efficient anesthesia, especially when infiltrated in the tissues, either alone or, still better, combined with small doses of epinephrin. On application to mucous membranes, solutions of benzyl alcohol produce also a distinct anesthetic effect, but the anesthesia is very superficial and does not penetrate into the deeper layers of the tissues. It was found that a much better anesthesia of mucous or skin surfaces could be produced by application of pure benzyl alcohol. Pure benzyl alcohol cannot be injected into living tissue for the same reason that pure ethyl alcohol cannot be administered in that way: it leads to local necrosis. When applied to mucous surfaces, however, the drug is not irritating and produces a marked anesthetic effect.

I undertook experiments with a view of enhancing the penetrating power of benzyl alcohol when applied to mucous or skin surfaces. It was found that when the drug was mixed with certain lipoid solvents, the local anesthesia after its application extended more deeply below the surface. Among the most satisfactory of such solvents were found to be xylene and chloroform, especially the latter.

In the present note I wish to call the attention of the general practitioner to a very satisfactory minor use of benzyl alcohol. I have found, as have others, that benzyl alcohol either alone (100 per cent), or, still better, when mixed with an equal part by volume of chloroform, furnishes a most efficient anodyne for toothache, when introduced on a pledget of cotton into a tooth cavity, or applied to an exposed nerve. The relief obtained by the use of such drops is marked and almost instantaneous, and is also long-lasting. I am not aware of any other drug, with the exception of cocain, which is more efficient in relieving toothache. As benzyl alcohol is the least toxic of all the well-known local anesthetics, the repeated and free use of such a combination as was described above is free from the objections which are raised by the employment of cocain, and it can be administered with impunity even to small children. It is for this reason that it was deemed worth while to publish this note in order to advise the medical practitioner of a simple remedy for the relief of one of the most excruciating forms of pain.—JOURNAL A. M. A.

# FUTURE EVENTS

The next meeting of the STATE BOARD OF DENTAL EXAMINERS will be held in Fargo, N. D., the second Tuesday in January. All applications and credentials must be filed with the Secretary on or before January first. For further information and application blanks write the Secretary,

W. E. HOCKING, Devils Lake, N. D.

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THE CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY will hold a mid-winter educational meeting at the Robert Treat Hotel, Newark, New Jersey, during the first week in March. All the prominent dental manufacturers and dealers will exhibit. The clinicians and essayists will be from among the best in the country, and the meeting promises to be one of the most successful and largest attended ever held in Northern New Jersey. Further notices of the exact time and the names of the men who will clinic, and the program will appear in later issues of this publication.

HENRY J. GIBBINS, D.D.S., *Chairman Executive Committee.*

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CHICAGO DENTAL SOCIETY
ANNUAL CLINIC AND MOUTH HYGIENE MEETING
CONGRESS HOTEL, JANUARY 27, 28, 29, 1921

THURSDAY: Twelve unit and lecture clinics for intensive study. Clinics to be given by lecture, lantern slides, charts, models and table demonstration. Most clinics to occupy both morning and afternoon sessions so that guests will only be able to see one entire clinic or two half-day clinics. Each clinic in separate room, and limited to 100 in attendance.

8 P. M., Paper: "Focal Infection in Relation to General Health," by Ernest E. Irons, M.D., Professor of Medicine, Rush Medical College, Chicago.

FRIDAY—MOUTH HYGIENE DAY: Demonstrating care of children's teeth by dental hygienists from six infirmaries. Clinics showing results of public school service and industrial institution service. Motion pictures. Public meeting. Nationally known speakers. Annual banquet in honor of Thomas Alexander Forsythe, Boston, Mass.

SATURDAY—GENERAL CLINIC: Selected from 35 neighboring states and district societies. By dental colleges represented at annual meeting of Institute of Dental Teachers. By fifty local dentists on advanced methods of technical procedure. Manufacturers' exhibit.

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The annual meeting of the MINNESOTA STATE DENTAL ASSOCIATION will be held at the Auditorium, St. Paul, Minnesota, on February 9, 10, 11 and 12, 1921. A cordial invitation is extended to all members of recognized Dental Societies.

C. H. TURNYMIST, *Secretary,*
338 La Salle Bldg., Minneapolis, Minn.